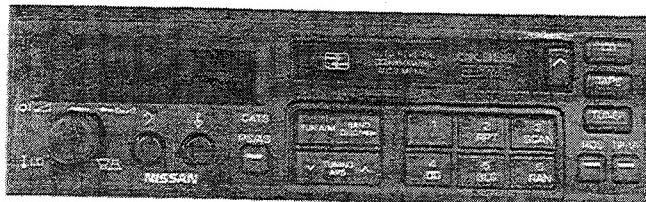


clarion Service Manual

Published by Service Administration Section



CLAR -00361



**NISSAN Automobile Genuine
 LW/MW/FM-MPX Synthesizer
 Radio Cassette Combination**
Model PN-9526U(CK98B)
 (Genuine No. B8025-C9982)

■SPECIFICATIONS:

● Radio section

Circuit system:	Superheterodyne
Tuning system:	Electronic tuning
Receive range:	LW 153kHz to 281kHz MW 531kHz to 1,602kHz UKW(FM) 87.5MHz to 108MHz
Intermediate frequency:	LW 450kHz MW 450kHz UKW(FM) 10.7MHz
Quieting sensitivity:	LW Less than 40dB (at 20dB S/N) MW Less than 32dB (at 20dB S/N) UKW(FM) Less than 15dB (at 30dB S/N)
Separation:	UKW(FM) More than 20dB
Auto tuning stop sensitivity:	LW DX 32±6dB LO 52±6dB MW DX 32±6dB LO 52±6dB UKW(FM) DX 23±6dB LO 46±9dB

● Tape section

Reproduction system:	4 track, 2 channel stereo cassette tape playback
Tape speed:	4.76cm/sec. (1-7/8 ips)
Wow and flutter:	Less than 0.18% (W.R.M.S.)

S/N ratio:

NORM (120μs)
More than 48dB (□ OFF)
More than 56dB (□ ON)
MTL (70μs)
More than 50dB (□ OFF)
More than 58dB (□ ON)

Cross talk:

More than 40dB
More than 30dB

Separation:

Less than 130sec. (C-60)

● Synthesis

Power supply voltage:
DC 13.2V (10.8V to 15.6V)
Negative ground

Current consumption:

Less than 7.5A

Load impedance: 4Ω×2, 4Ω×4

Power output: More than 9W×2
(at 3% distortion)

Dimensions:

Width 180mm
Height 52mm
Depth 160mm

Weight:

1.4kg

• Dolby Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

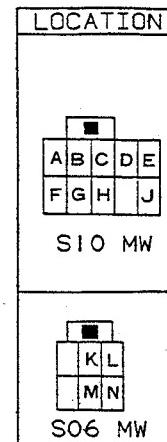
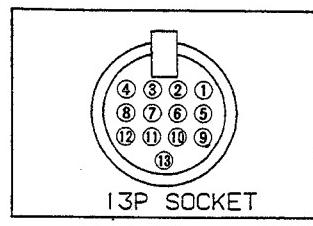
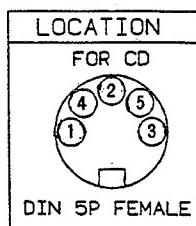
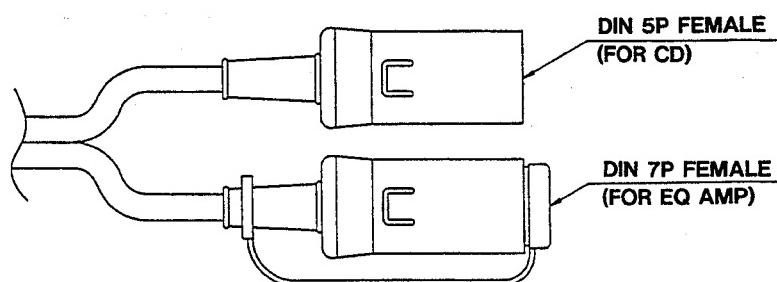
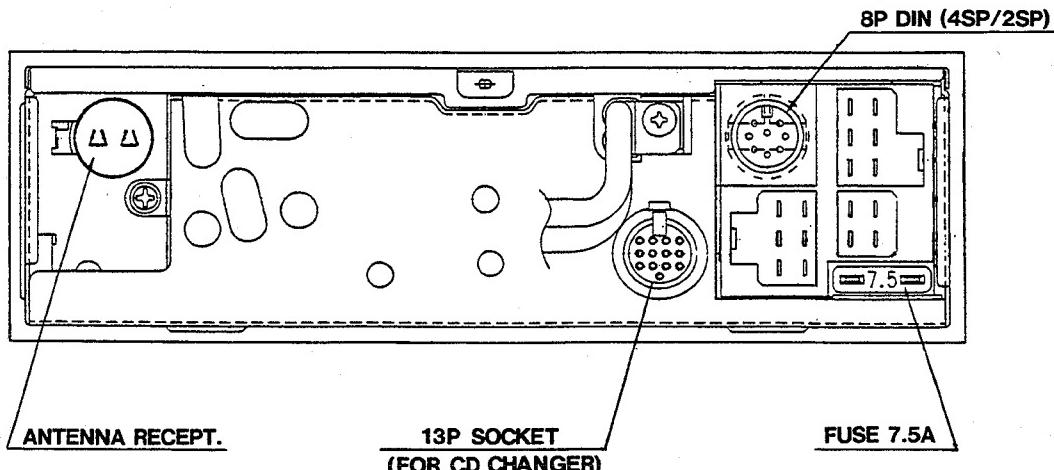
• Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

■COMPONENTS:

● PN-9526U-A

Main unit	093-0842-01	1
Antenna jumper	921-8408-00	1
Parts bag	714-5008-41	4
{ Machine screw	735-5008-11	2
{ D-sems screw	922-2165-00	1
Parts bag	076-0397-02	1
{ Plug	291-0051-01	2
{ Sticker	346-0071-01	1
Carrying case		

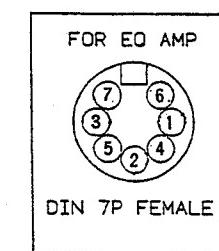
■REAR VIEW and CONNECTORS:



1	CD-ON SIGNAL (COMBI←CD)
2	COMBI-ON SIGNAL (COMBI→CD)
3	SIGNAL GROUND
4	L-CH INPUT
5	R-CH INPUT

1	C-BUS DATA
2	C-BUS CLOCK
3	
4	C-BUS SERVICE REQUEST
5	
6	Signal GND
7	CD L-ch input
8	CD R-ch input
9	
10	BACK UP
11	REMOTE CONTROL
12	GND
13	

A	FRONT LEFT SP.+
B	FRONT RIGHT SP.+
C	BACK UP
D	LIGHTING SWITCH
E	ACC
F	FRONT LEFT SP.-
G	FRONT RIGHT SP.-
H	ANT. SIGNAL
J	GROUND
K	REAR LEFT SP.+
L	REAR RIGHT SP.+
M	REAR LEFT SP.-
N	REAR RIGHT SP.-



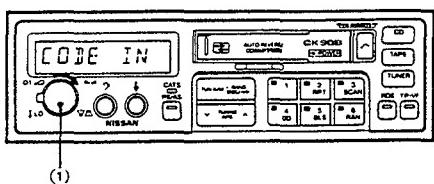
1	
2	Signal GND
3	Remote control
4	R-ch output
5	R-ch input
6	L-ch output
7	L-ch input

THEFT PREVENTION:

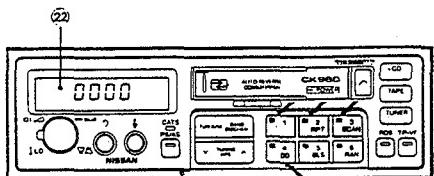
Operation

* Unlocking the unit

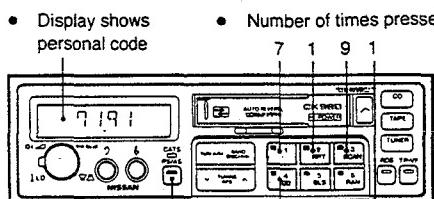
1. Make the necessary wire connections (watch out for wrong connections).
2. If the unit is switched on, the display (22) will show "CODE IN".



3. Press one of preset buttons (1, 2, 3 or 4), then "0000" is shown on the display (22).



4. Enter your personal code number by pressing preset buttons 1, 2, 3, 4 the required number of times to display the code.
5. Press the PS/AS button (6) to enter the code. The radio/cassette combination will operate.



6. If the wrong code number is entered, the display shows "-----". Wait ten seconds, then enter the correct code.



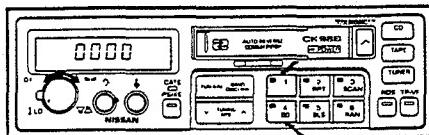
Note:

There are two ten-second waiting periods after a wrong code number has been entered. Then waiting periods of fifteen minutes duration will follow. This function is designed to prevent a thief from trying to guess the code number.

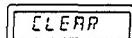
* Clearing the code

When the vehicle requires servicing, it is important to clear the personal code from the Anti-theft system. Clearing the code will allow the technician to interrupt the battery supply (for maintenance work, etc.) without locking the unit.

1. Turn the audio unit off.
2. Press and hold preset buttons 1 and 4.
3. Switch on the unit while buttons 1 and 4 are being pressed to display "CODE IN".
4. Switch off the unit.
5. Switch on the unit again while buttons 1 and 4 are being pressed to display "0000".



6. Enter your personal code number as previously described.
7. Press the PS/AS button (6) to enter the code. The display will momentarily flash "CLEAR" and the radio/cassette combination will operate.



Note:

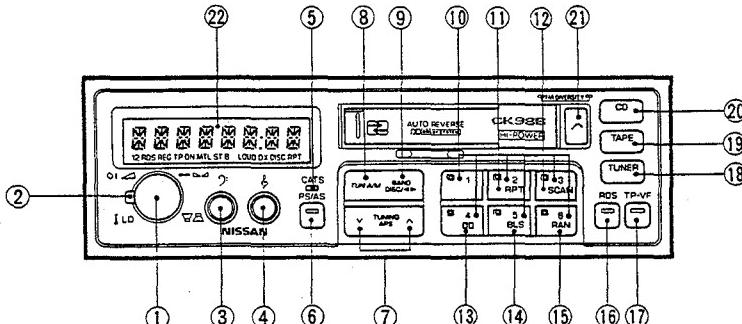
- If the wrong code number has been entered, the display will not change and the radio will not operate. To enter the correct code number, switch off and repeat the procedure.
- In the cleared condition, each time the unit is switched on, "CLEAR" will flash momentarily on the display.
- Do not leave the vehicle unattended or parked in a high-risk area when the code has been cleared. The Anti-theft system is inactive.

* Reactivating the code

Reactivate the code as soon as the vehicle returns from servicing, etc.

1. Turn the radio unit off.
 2. Press and hold down preset buttons 1 and 4.
 3. Turn the radio on while buttons 1 and 4 are being pressed.
- The display will momentarily flash "CODE IN" and the unit will operate.

OPERATION:

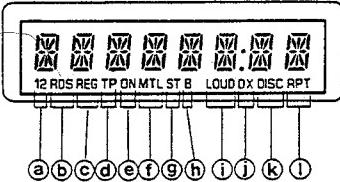


- ① Power Switch (o1)/Volume Control (▲)/Balance Control (↔)/Loudness Switch (LD)
- ② Fader Control knob (FAD)
- ③ Bass Control knob (BASS)
- ④ Treble Control knob (TREBLE)
- ⑤ CATS indicator
- ⑥ Preset Scan/Auto Store Switch (PS/AS)
- ⑦ Fast Forward/Rewind Button/APS Switches (Auto Programme Search)

- ⑧ Tuning Mode Switch (TUN A/M)
- ⑨ Band Selector Switch/Disc UP Search Switch/Play Button/Programme Switch
- ⑩ Preset Buttons (1, 2, 3, 4, 5, 6)
- ⑪ Repeat Switch (RPT)
- ⑫ Tape Scan Switch (SCAN)
- ⑬ Dolby NR Switch (DOLBY NR)
- ⑭ Blank Skip Switch (BLS)
- ⑮ Random Play Switch (RDM)

- ⑯ RDS Switch (RDS)
- ⑰ Traffic Programme Switch (TP-VF)
- ⑱ Tuner Mode Switch (TUNER)
- ⑲ Tape Mode Switch (TAPE)
- ⑳ CD Selector Switch (CD)
- ㉑ EJECT Button (EJECT)
- ㉒ Display

■ Display



* Tape Mode Switch (TAP)

While listening to the radio or CD, press this switch to start cassette tape playback.

* Play/Programme Switch (PS)

Press this switch from any tape mode to start tape playback. Playback starts automatically when you press the Tape Mode Switch (TAP) during radio reception or CD playback.

Press the Play/Programme switch during playback to reverse the tape transport direction and listen to the opposite side. The display will show in which direction the tape is playing, as follows:

Tape transport direction	
TAPE >>	Upper tracks playing
TAPE <<	Lower tracks playing

* APS (Auto Programme Search) Switches (FF, REW)

Press the FF or REW button twice to activate APS. The tape is forwarded or rewound to the beginning of the next or previous track, from which point normal playback resumes.

* Repeat Switch (RPT) (RPT)

In the tape mode, press this switch to repeat playback of a track. "REPEAT" is displayed on the display. When playback of the current track is complete, the tape is rewound and playback of the track is repeated.

Press the switch once more to disengage the repeat mode.

* Blank Skip Switch (BLS) (BLS)

In the tape mode, press this switch to activate the Blank Tape Skip mode. "BLANK" is displayed on the display. If a blank tape portion exceeding 10 seconds is found during playback, the tape will be forwarded automatically to the beginning of the next track.

Press the switch once more to disengage the Blank Tape Skip mode.

* Tape Scan Switch (SCAN) (SCAN)

In the tape mode, press this switch to activate the Tape Scan mode. When engaged, the indicator above the switch lights.

When the Tape Scan mode is engaged, pressing the FF button (FF) twice to engage SCAN, the tape is fast forwarded to the next track, 10 seconds of the track is played, and so on. During Forward Scanning, "FF SCAN" is displayed.

To cancel Tape Scan, press this switch again.

To scan the tape in the reverse direction, press the REW button (REW). During Reverse Scanning, "REW SCAN" is displayed.

* Tuner Mode Switch (TUNER) (TUNER)

When listening to a CD or a cassette tape, press this switch to change the set to the radio.

* Tuning Mode Switch (TUN A/M) (TUN A/M)

Use this switch to select between the manual and seek tuning modes.

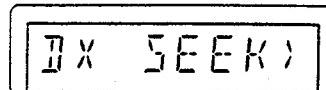
"MANU" is displayed when manual tuning is engaged. After selecting the desired mode, use the TUNING button (\wedge or \vee) (TUNING) for tuning.

The mode will automatically return to seek tuning five seconds after manual tuning has been set or completed.

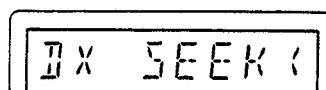
* Seek Tuning (SEEK)

Press the TUN A/M switch to clear "MANU" in the display. Also, if no button is pressed for five seconds when the Manual Tuning mode has been engaged, the unit will revert to the Seek Tuning mode.

Press the right side (\wedge) of the TUNING button (TUNING) for search for broadcasting stations at higher frequencies and to tune in the next station. Press the left side (\vee) to search at lower frequencies. "DX SEEK >" or "DX SEEK <" respectively, is displayed.

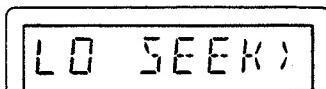


DX SEEK Up

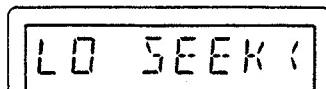


DX SEEK Down

When pressing the TUNING button (TUNING), the DX mode is set. To seek for stations in the Local mode (with lowered sensitivity), press the TUN A/M switch (TUN A/M) for 2 seconds or more. In this case, "LO SEEK >" or "LO SEEK <" will be displayed.



Local SEEK Up



Local SEEK Down

- Use Local Seek (LO) to search for strong stations only, and DX SEEK for all other stations.

* Preset Buttons (PRESET)

It is possible to programme six stations on each of the FM 1, FM 2 and MW/LW bands. Each Preset button has two functions, depending on how long it is kept pressed.

- Press the Preset button for less than two seconds to recall a Preset station.
- Press the Preset button for more than two seconds to memorise the tuned in station.

* Preset Scan/Auto Store Switch (PS/AS) (PS/AS)

This switch has two functions, depending on how long it is kept pressed.

Pressing this switch for more than two seconds, up to six strong stations in the area are stored automatically on the six presets for the selected band.

Pressing the switch for less than two seconds, the preset stations on the selected band are scanned.

■ Using the Radio Data System (RDS)

* RDS Switch (RDS)

- This switch is off when the unit is turned on for the first time.

- RDS only works on the FM band.

- When the RDS switch is switched on, "RDS" is displayed.

1. When an RDS broadcast station is received, the name of the received station will be displayed (PS: Programme Service name).

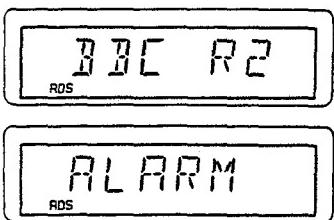
2. If the receiving conditions worsen while receiving an RDS broadcast, the unit will automatically switch to another frequency on which the same broadcast is available under better receiving conditions.

3. When an emergency broadcast, in which a PTY (Programme-Type code) alarm code is transmitted, is received during the reception of an RDS broadcast, "ALARM" will be displayed and the volume level will be increased and the broadcast message is heard.

Notes:

1. Even when listening to a tape or CD, the unit will switch to the radio and the emergency broadcast can be listened to. At this time the radio operation buttons cannot be used.

2. By switching off the RDS switch during the emergency broadcast, the set will return to the tape or CD operation mode.



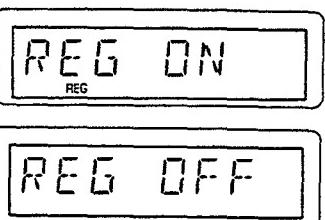
4. When the receiving conditions worsen while receiving an RDS broadcast and there is no stronger broadcast station transmitting the same broadcast, "RDS" will start flashing in a little while.
When the receiving conditions improve, the flashing of "RDS" will stop.
5. When the right side (▲) or the left side (▼) of the TUNING button (7) is pressed while the RDS switch is on, the unit will only search for stations broadcasting RDS signals.
6. Preset Scan during RDS reception:
Pressing the PS/AS switch (6) for less than two seconds when the RDS switch is switched on, only preset stations broadcasting the RDS signal will be tuned in.
Auto Store during RDS reception:
Pressing the PS/AS switch (6) for more than two seconds when the RDS switch is switched on, only RDS stations with different programme content will be stored on the Preset buttons (10).

**• Same Programme Search
(PI: Programme Identification)**

If you press a Preset button (10) on which an RDS station is stored and the station cannot be received (RDS indicator flashes), press the same Preset button (10) one more time ("SEARCH" is shown in the display). The set will search for stations at other frequencies with the same programme content, i.e. the same PI code, as the station stored in memory. Thus, a desired programme can easily be tuned in although the broadcasting frequency is unknown.

• REG (Regional) Switching ■④

1. Pressing the RDS switch (6) for 2 seconds or longer permits on/off switching of the Regional mode. The initial setting is the on state in which the "REG" indicator is lit.
"REG ON" is displayed when the Regional mode is engaged, and "REG OFF" is displayed when the mode is disengaged.



2. When the Regional mode is engaged (REG indicator lit), only the same station is automatically tracked.
When the Regional mode is off, the local programme is tracked and you can continue to listen to a programme being switched from one station to another without any interruption.

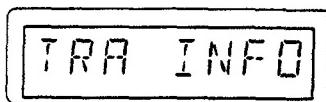
Note:
REG only works on the FM band.

*** Traffic Programme Switch (TP-VF) ■①**

1. The TP-VF switch is off when the unit is turned on for the first time.
2. When the TP-VF switch is switched on, "ON" is displayed.
When a TP-VF station is received, the TP-VF indicator lights. This indicates that the station is broadcasting the RDS TP code or the SK signal in case of ARI broadcasts.
When the TP-VF switch is on and a station broadcasting traffic announcements is tuned in, the TP-VF ON

indicators light.

"TRA INFO" is displayed when a traffic information announcement is broadcast. The volume will increase to the preset level and you will hear the traffic announcement.



Notes:

- Even when listening to a tape or CD, the unit will switch to the radio and the traffic information announcement can be listened to.
At this time the radio operation buttons cannot be used.
- Switching off the TP-VF switch during the traffic information announcement, the unit will return to the tape or CD operation mode.
- When the right side (▲) or the left side (▼) of the TUNING button (7) is pressed while the TP-VF switch is on, the unit will only search for stations broadcasting the TP-VF signal.

Note:

When this button is pressed in areas where traffic information is not broadcast, the seek operation is not cancelled and so the TP-VF switch should be switched off to stop seek tuning.

4. Preset Scan when the TP-VF switch is on:

Pressing the PS/AS switch (6) for less than two seconds when the TP-VF switch is switched on, only preset stations broadcasting the TP-VF signal will be tuned in.

Auto Store when the TP-VF switch is on:

Pressing the PS/AS switch (6) for more than two seconds when the TP-VF switch is switched on, only stations broadcasting traffic information announcements will be stored on the Preset buttons (10).

Note:

The TP-VF switch only works on the FM band.

- In the tape mode or the CD mode when the TP-VF indicator is lit, switching on the RDS switch (6) will provide continuous, automatic tracking of the TP-VF station.

*** CD Selector Switch (CD) ■⑩**

This switch is used to switch from the tuner, cassette deck, or an external accessory component to the CD Changer mode. CD playback starts when this switch is pressed from the Tuner or Cassette mode.

When the CD Selector Switch (10) is pressed, "CD LOAD" is displayed, the power to the CD Changer is switched on, and playback starts from the first track on the first disc. (First time only)

If no magazine has been set in the CD Changer, "NO MAGAZ" will be displayed.

When the CD Selector Switch (10) is pressed, the display will first show "CD LOAD", then the disc number, and upon that the track number. During actual disc play, both the track and the played time will be displayed.

Refer to the figure on the right for the display messages:

Display System	
① CD selection	CD LOAD
② DISC display	Disc No. 00 DISC
③ TRACK display	TRACK No. 00 TRACK
④ During play	TRACK No. P-TIME 00 00:00
Random play	RANDOM
No magazine	NO MAGAZ
No such disc	NO DISC

■ Last Position Memory Function

This function stores in memory the track that was being played when the power was switched off while a CD was playing or when another mode was selected. The next time playback on the CD Changer is selected, play will begin from the beginning of the last track played.

* Disc UP Search Switch

This button is used when you wish to listen to a different CD. Pressing the Disc UP switch , the CD Changer will set the next higher disc, the disc number will be displayed, and playback continues from the selected disc. With each subsequent press of the switch, the disc number will change and the disc corresponding to the number displayed on the digital display at that time will be played. If there is no disc in the place corresponding to the displayed number, "NO DISC" will be displayed on the digital display and the player will automatically change to the next disc and play it.

■ Track Search

Press the right side of the TRACK button (\wedge) to start playback from the next track. Press the left side of the TRACK button (\vee) to return to the beginning of the track currently being listened to and continue play from there. To move ahead or back several tracks at once, press either side of the TRACK button repeatedly.

■ Fast Forward/Fast Return

Keeping the right side of the TRACK button (\wedge) pressed, high-speed playback in the forward direction is engaged. Keeping the left side of the TRACK button (\vee) pressed, high-speed playback in the reverse direction is engaged.

Release the button to stop high-speed playback and resume normal playback.

* Repeat Switch (RPT)

Press the RPT switch once to repeatedly play back the current selection. The RPT indicator will light. Press the RPT switch once more for repeat playback of the current DISC. The DISC and RPT indicators will light. Press the RPT switch a third time to disengage repeat playback, and confirm that the DISC and RPT indicators go off.

* Tape Scan Switch (SCAN)

Pressing the SCAN switch causes the indicator at the top of the switch to light and the CD Changer to play the first 10 seconds of each track on the loaded CDs. When the track you are searching for is played, press the SCAN switch again to continue playback of that track. At the same time the indicator will go off.

* Random Play Switch (RDM)

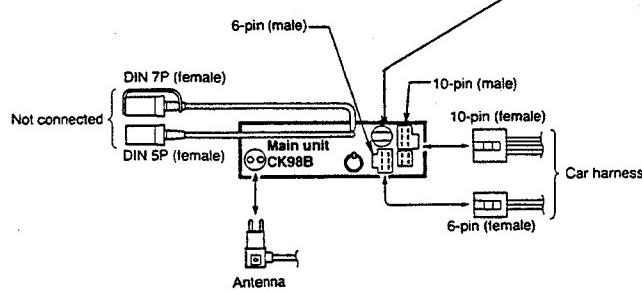
Pressing the RDM switch causes the indicator at the top of the switch to light, "RANDOM" is displayed, and random play of all tracks on the selected disc begins. When all of the tracks on the disc have been played once, the next disc is selected and random playback of that disc continues. When there are no more discs left in the magazine, random playback will start anew from the first disc in the magazine. To cancel random playback, press the RDM switch once more and make sure "RANDOM" disappears from the display.

■ WIRE CONNECTION:

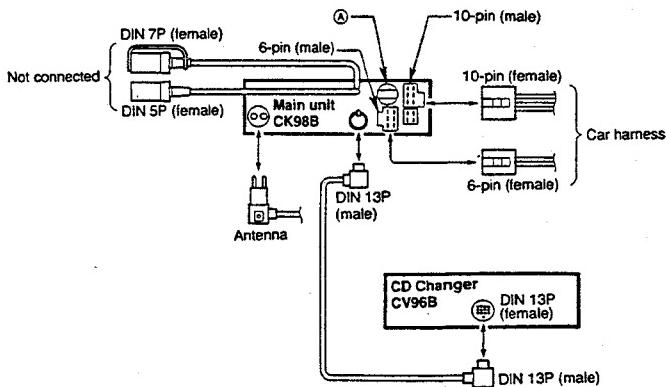
1) When using only with the main unit

(A) Shorting plug (black)

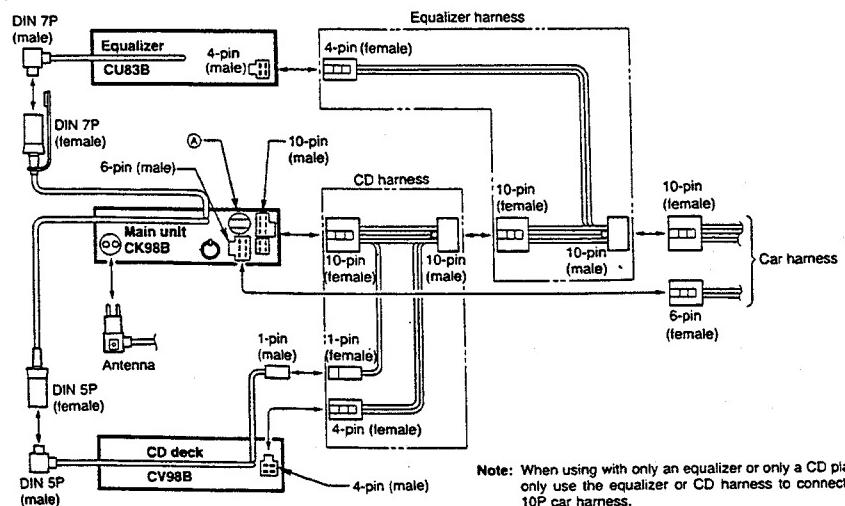
This unit is designed to accept 4 speakers, but also allows the use of only 2 speakers. To configure the unit for 2-speakers, remove the black shorting plug from the rear of the unit and replace it with the white shorting plug. When using 2-speakers, the Fader control will not function.



3) When using with the CD CHANGER



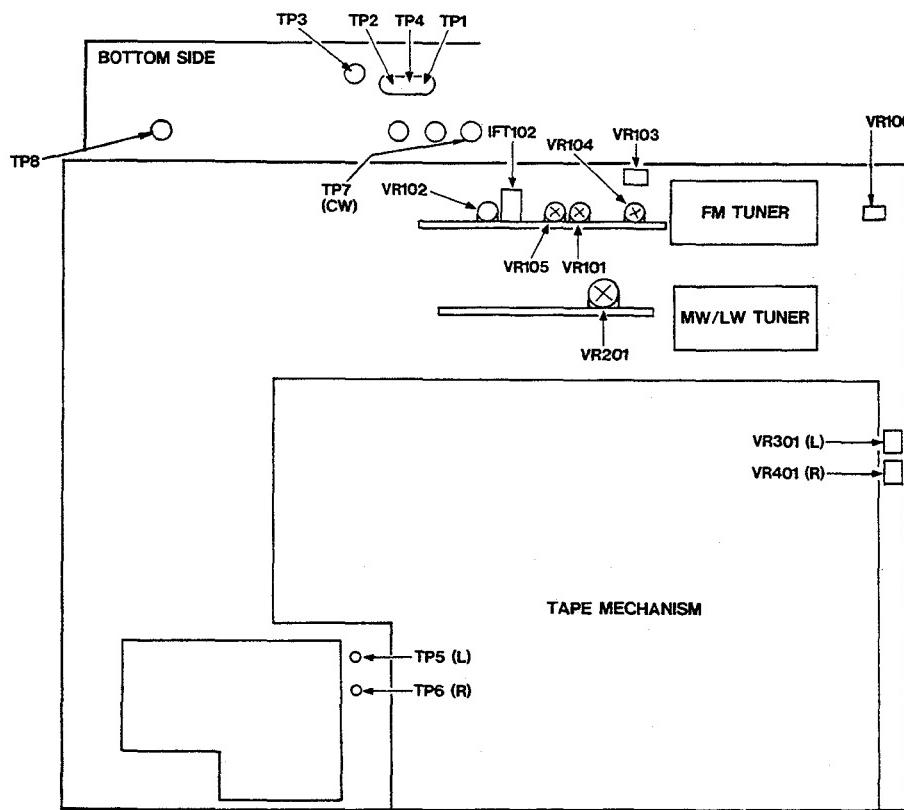
2) When using with an Equalizer or CD DECK



■ADJUSTMENT:

Adjustment item	Adjustment point	Procedure
0V	IFT102	1. Connect the digital voltmeter to TP1 and TP2. 2. Input the 98.1MHz/55dB signal and adjust the reading of digital voltmeter to $0.0V \pm 30mV$ by IFT102.
Limiter	VR104	1. Input the 98.1MHz, 55dB SSG signal. (1kHz, 30%) 2. Adjust VR to make the set output 0dB (2.45V). 3. Reduce the output of SG 10dB. 4. Adjust VR104 until output level decrease to 3dB.
SD	VR105	1. Input the 98.1MHz/20dB signal (1kHz MOD). 2. Adjust VR105 so that the voltage of TP4 is in the range 0V to 3.5V.
Diversity Sensitivity	VR100	1. Connect the digital voltmeter to TP8 and GND. 2. Input the 98.1MHz frequency at 20dB and adjust the level to $160mV \pm 10mV$ by VR100.
S-meter	VR103	1. Connect the digital voltmeter to TP3. 2. Input the 98.1MHz frequency at 55dB (1kHz MOD) and adjust the level to $4.5V \pm 0.1V$ by VR103.
SASC	VR101	1. Input the 98.1MHz/65dB, 7kHz modulation frequency, 30% modulation degree SSG signal. 2. Adjust the output level of the volume controller to 0dBm (0.775V). 3. Set the SSG output to 35dB and adjust VR101 so that the output level is -2dB.
Separation	VR102	1. Input the 98.1MHz, connect the output of a stereo modulator to the external modulation terminal, and input a 65dB SSG signal. 2. Set the stereo modulator to the L or R ch and adjust VR102 so that the maximum separation is obtained.
CW (Carrier Wave)	VR201	1. Input the 98.1MHz/55dB, 1kHz (MONO) modulation frequency, 2.0kHz modulation rate SSG signal. 2. Connect the oscilloscope to TP7. 3. Adjust VR103 so that the waveform of TP7 is in the range 5V to 0V. (1.9kHz → Low, 2.1kHz → High)
Dolby NR	VR301 and VR401	Insert a Dolby level test tape (400Hz–200nWb/m), connect the milli-volt meter to TP5 and TP6, and adjust VR301 and VR401 to obtain an output of $245mV \pm 1dB$.

●ADJUSTMENT POINT



■EXPLANATION OF IC's:

Refer to description in IC service manual vol. 1.

KC-819 051-0606-01 Hybrid IC for Tone Control P23

Refer to description in IC service manual vol. 2.

NJM2058M 051-0556-01 Quad. OP. Amp. P41

LA2000C 051-0620-00 Music Interval Detection P43

Refer to description in IC service manual vol. 3.

μPD7225G-00 051-1151-00 Programmable LCD Controller/Driver P27

TC4013BF 051-0142-05 C-MOS IC P44

M5201FP 051-0853-01 Switch OP. Amp. P30

MB3771PF(-G) 051-0869-05 Power source voltage Supervisory IC P41

LC7070NM 051-1150-00 Sync/Error correction LSI for RDS P11

LB0354 051-0619-01 Loudness with Muting P22

TA8205AH 051-0958-01 15W BTL×2 ch Power Amp. P24

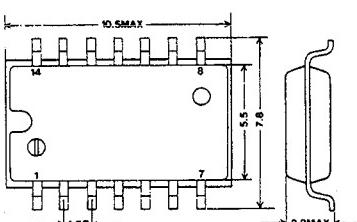
CXA1102M 051-1038-01 Dolby B Type Noise Reduction System P14

TA7705F 051-0714-01 Dual Preamp for Auto reverse Car stereo P13

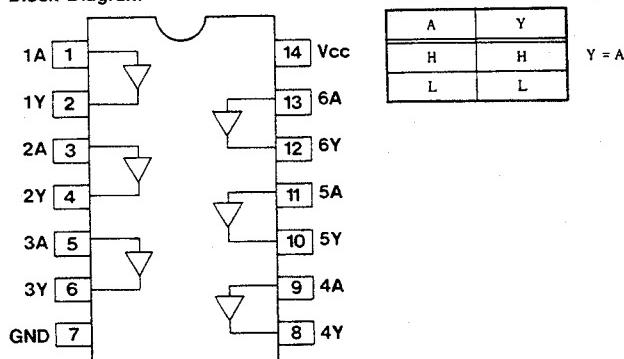
NJL5161K-P 051-1114-00 Super-Thin type Photoreflector P38

■HD74LS07FPD 051-0160-56 Hex Buffers/Drivers

Outward Form

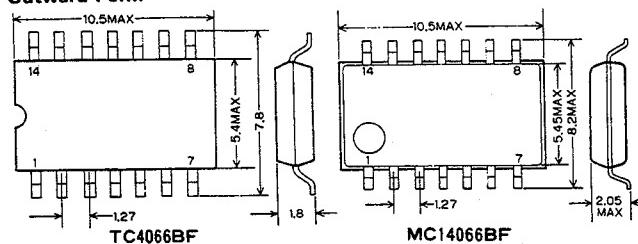


Block Diagram



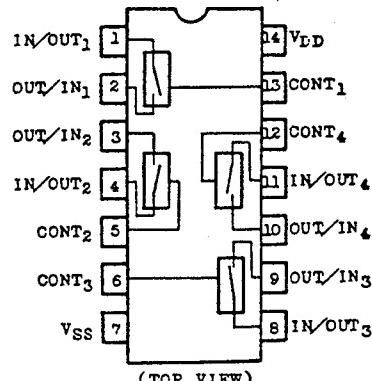
■TC4066BF 051-0267-05 QUAD BILATERAL SWITCH
MC14066BF 051-0267-35

Outward Form



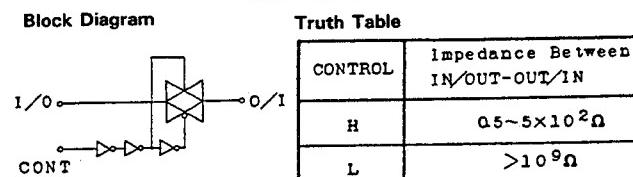
PN-9526U

Terminal Connection



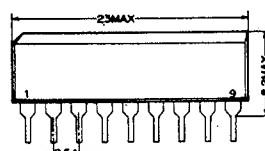
(TOP VIEW)

Block Diagram



■TA7372P 051-1282-00 FM Diversity

Outward Form

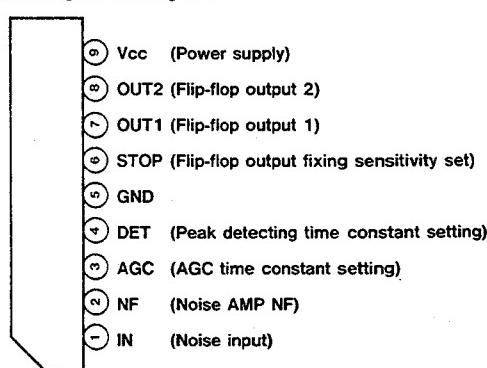


Outline

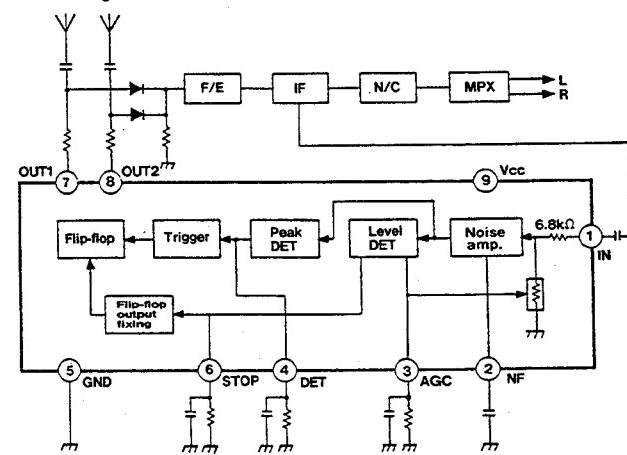
This IC is used for FM diversity in selecting the better one of 2 antennas by detecting the increase of noise amount from the receiver.

- It effectively acts for multi-path strain and skip noise.
- Mounting this IC to the conventional FM car radio, it makes FM diversity.
- By the built-in AGC circuit contents, noise can be widely detected.
- By fixing on either antenna at weak input time, it is possible to suppress the abnormal noise generated at the time of weak input.
- Operation power supply voltage range : Vopr=7~15V (Ta=25°C)

Terminal Arrangement Diagram

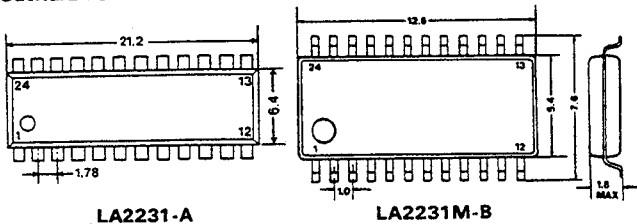


Block Diagram



LA2231-A 051-1144-01 RDS Decoder
LA2231M-B 051-1144-10 RDS Decoder

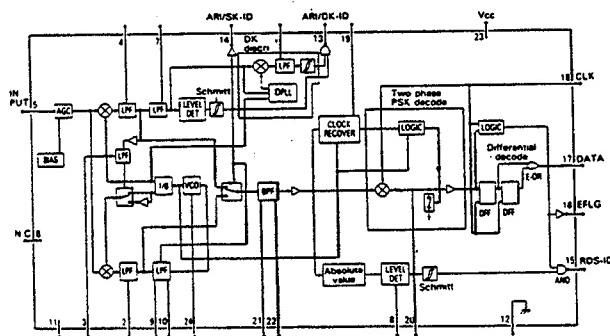
Outward Form



Function

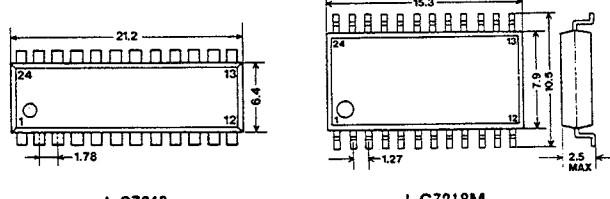
- (1) DSB demodulation.
- (2) Sub-carrier wave regeneration.
- (3) Bit rate clock regeneration.
- (4) Data differential decoding.
- (5) ARI-SK discrimination.
- (6) ARI-DK discrimination.
- (7) RDS indicator driving.
- (8) ARI indicator driving.
- (9) Data error indicating output

Block Diagram

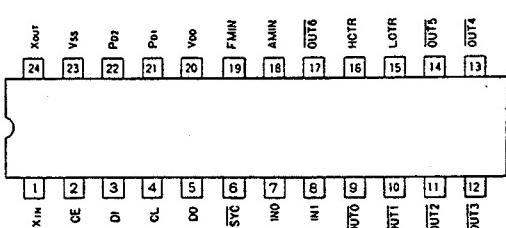


LC7218 051-1323-00 Electronic Tuning PLL Frequency
LC7218M 051-1323-05 Synthesizer

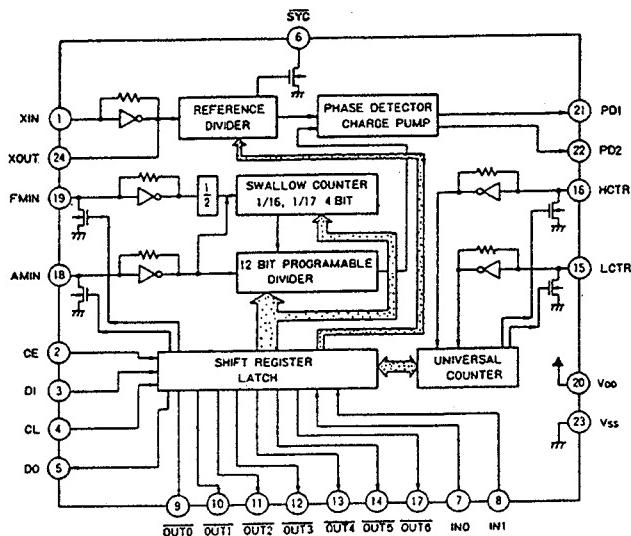
Outward Form



Terminal Connection



Block Diagram

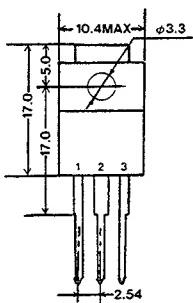


Terminal Connection Table

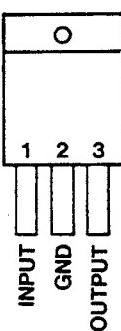
No.	Terminal name	Function
1 24	X _{IN} X _{OUT}	Crystal connecting terminal. (7.2MHz)
2	CE	Chip enable terminal: H level when input and output serial data.
3	DI	Input data terminal: Serial data input, transferred from controller to this IC.
4	CL	Clock terminal: Synchronous clock when input and output serial data.
5	DO	Output data terminal: Serial data output, transferred from this IC to controller.
6	SYC	Controller clock terminal. (400kHz)
7 8	IN0 IN1	Input port: Signal from both terminals is transformed from parallel to serial data, output from DO output terminal.
9 14 17	OUT0 OUT1 OUT2 OUT3 OUT4 OUT5 OUT6	Output port: Serial data O ₀ –O ₆ transferred from controller is latched, inverting data to output parallel data.,
15	LCTR	General purpose counter frequency/input terminal for cycle measuring signal.
16	HCTR	Input terminal for signal measuring general purpose counter frequency.
18	AMIN	Input terminal for local oscillating signal.
19	FMIN	Input terminal for local oscillating signal.
20	V _{dd}	Power terminal.
21 22	PD1 PD2	Charge pump output terminal.
23	V _{ss}	Ground terminal.

■μPC2410HF 051-1272-00 Stable Power Supply of Positive Voltage

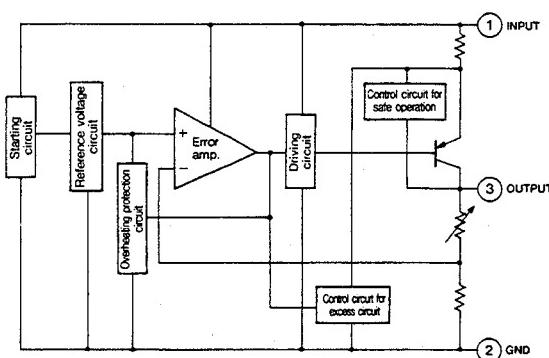
Outward Form



Terminal Connection



Block Diagram

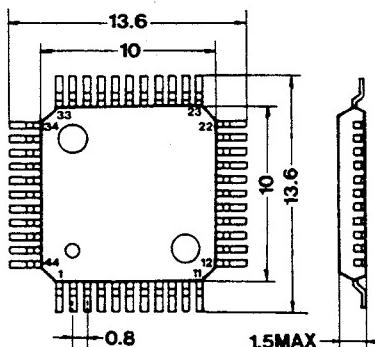


Electrical Characteristics (Ta=25°C, V_{IN}=15V, I_O=500mA)

Item	Symbol	Condition	Min	Typ	Max	Unit
Output voltage	V _O	0°C ≤ Ta ≤ 125°C 11V ≤ V _{IN} ≤ 25V 5mA ≤ I _O ≤ 500mA	9.7		10.3	V
Input stability	REG _{IN}	11.5V ≤ V _{IN} ≤ 25V		12	100	mV
Load stability	REG _{I_O}	5mA ≤ I _O ≤ 1A		6	100	mV

■μPD75006GB-546-3B4 051-1301-21 SF-X mechanism controller

I Outward Form



II Terminal Description

Pin No.	Terminal name	I/O	Function
1	NC	O	Unused (open).
2	MTL OUT	O	Output for a change-over to the metal mode. This terminal is used for switching over the equalizer of the preamplifier, changing the output signal to "Hi" when the output signal of Terminal 5 is "Low".
3	5V-REMOTE	O	ON/OFF controller for 5V power source. "Hi" when Acc is ON. "Low" when Acc is OFF.
4	APC DETECT	I	Detection of the level for selecting music. "Low" during the interval between pieces of music. "Hi" when music is playing.
5	MTL-SW	I	Detection of a metal tape. "Low" in the case of a metal tape. "Hi" in the case of a normal tape.
6	PACK-SW	I	Detection of the presence of cassette tape. "Low" only when the pack is set in the fixed position. "Hi" in other cases.
7	PLAY-SW	I	Detection of the PLAY mode. "Low" when it is in the PLAY mode. "Hi" in other cases.
8	STOP-SW	I	Detection of the STOP mode. "Low" when it is in the STOP mode. "Hi" in other cases.
9	EJECT-END SW	I	Detection of the completion of EJECT operation. "Low" when the EJECT is completed. "Hi" in other cases.
10	FF-SW	I	Detection of FF (REW) position. "Low" when it is in the FF (REW) APC mode. "Hi" in other cases.
11	NC	-	Unused (GND).
12	NC	-	Unused (open).
13	DOLBY ON/OFF	O	Output of the DOLBY ON/OFF signal. "Hi" when DOLBY is ON. "Low" when DOLBY is OFF.
14	DOLBY B/C	O	Output of the DOLBY B/C change-over signal. "Low" when DOLBY is in B. "Hi" when DOLBY is in C.
15	AUX/TAPE	O	Output of the AUX/TAPE change-over signal. "Low" when it is in the CD/TUNER mode. "Hi" when it is in the TAPE mode.
16	SRQ	O	Serial bus line SRQ port. A selected piece of music plays when the service request mode is "Low". "Hi" normally.
17	Vss	-	GND.
18	XT1	-	Connected to GND.
19	XT2	-	Open.
20	RESET	I	Detection of RESET mode. "Low" when it is in the RESET mode.
21	X1	-	Main system clock.
22	X2	-	
23	P-P3	O	Output of a power motor control signal.
24	P-P1	O	
25	P-P2	O	

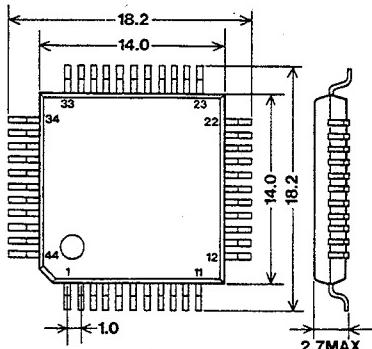
Operation mode	P-P1	P-P2	P-P3
EJECT mode	L	L	L
EJECT in operation	L	L	H
Hold	L	H	H
Unused	H	L	H
Head shift	H	H	L
Loading	H	H	H

Pin No.	Terminal name	I/O	Function																												
26 27 28	M-P2 M-P1 M-P3	O O O	Output of a main motor control signal. <table border="1" style="margin-left: 10px;"> <tr><th>Operation mode</th><th>M-P1</th><th>M-P2</th><th>M-P3</th></tr> <tr><td>STOP</td><td>L</td><td>L</td><td>L</td></tr> <tr><td>PLAY (FWD)</td><td>L</td><td>L</td><td>H</td></tr> <tr><td>Change-over of both direction and speed of rotation</td><td>L</td><td>H</td><td>H</td></tr> <tr><td>PLAY (REV)</td><td>H</td><td>L</td><td>H</td></tr> <tr><td>FWD-FF, REV-REW</td><td>H</td><td>H</td><td>L</td></tr> <tr><td>FWD-REW, REV-FF</td><td>H</td><td>H</td><td>H</td></tr> </table>	Operation mode	M-P1	M-P2	M-P3	STOP	L	L	L	PLAY (FWD)	L	L	H	Change-over of both direction and speed of rotation	L	H	H	PLAY (REV)	H	L	H	FWD-FF, REV-REW	H	H	L	FWD-REW, REV-FF	H	H	H
Operation mode	M-P1	M-P2	M-P3																												
STOP	L	L	L																												
PLAY (FWD)	L	L	H																												
Change-over of both direction and speed of rotation	L	H	H																												
PLAY (REV)	H	L	H																												
FWD-FF, REV-REW	H	H	L																												
FWD-REW, REV-FF	H	H	H																												
29 30 31	S-SI S-SO SCK	I O I	Serial bus line SI port. Serial bus line SO port. Serial bus line SCK port.																												
32	Acc-CONT	I	Acc control. Input "Hi" when Acc is ON. Input "Low" when Acc is OFF.																												
33	P13	-	Connected to GND.																												
34	NC	-	Unused (open).																												
35	FWD-REEL	I	Detection of a reel rotation in the FORWARD side.																												
36	LOAD-START	I	Detection of the start of tape loading. Input "Hi" when loading starts to operate.																												
38	NC	-	Unused. Connected to V _{DD} .																												
39	V _{DD}	-	5V power source.																												
40	MECH Vcc	O	ON/OFF control of the mechanism power source. Output "Hi" when the power source is ON. Output "Low" when it is OFF.																												
41	MECH. MUTE	O	Mute control. Output "Low" when MUTE is ON. Output "Hi" when MUTE is OFF.																												
42	PRE F/R	O	FWD/REV change-over. Output "Hi" when it is in the FWD mode. Output "Low" when it is in the REV mode.																												
43	APC P/F	O	Change-over of input level. Output "Low" when it is in the PLAY mode. Output "Hi" when it is in the FF-REW mode.																												
44	P73	O	Open.																												

■TA8151F(CLAR) 051-1371-00 FM PROCESSOR

TA8151 is a FM tuner IC, which is integrated from IF to MPX stages into one chip.

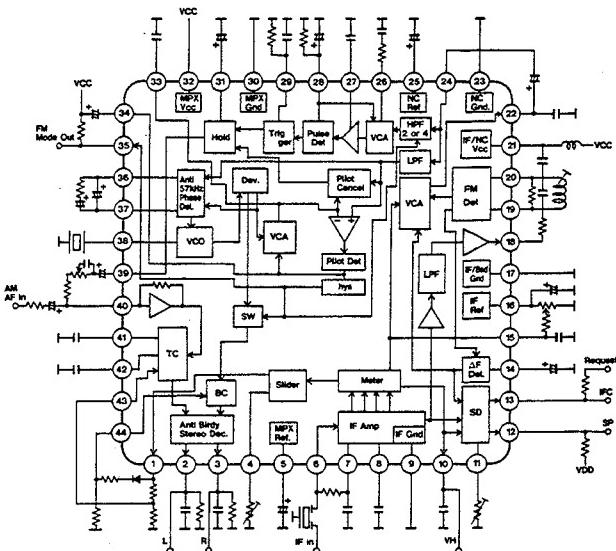
Outward Form



Function

- IF IF limiter amplification/differential peak FM detection/meter output/electric field strength muting/detuning muting/stop detection/IF counting request.
- NC Noise detection/noise AGC/noise detecting wave changeover/signal delay/unadjusted pilot cancellation/signal holding.
- MPX Unadjusted PLL method stereo decoder/blender control/tone control (low-cut, high-cut)/anti-ARI/anti-birdie.

Block Diagram



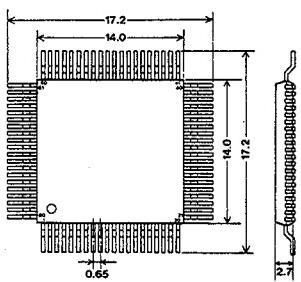
Terminal Connection

Pin No.	Symbol	Function
1	SO	Slider output terminal.
2	L out	MPX output terminal.
3	R out	
4	Slide	Blender of MPX unit, controllable range setting terminal for electric field strength of tone.
5	Ref. 3	3rd nominal voltage terminal.
6	IF in	IF amp. input terminal.
7	Bias	Provide bias to 8th pin via R.
8	By 1	IF amp. bypass terminal.
9	G 1	IF amp. ground terminal.
10	Meter	Meter output terminal in FM mode, and meter input terminal for slider circuit in AM mode.
11	SD	Sensitivity setting terminal of station detector.
12	SP	Pulse counting output terminal stopped by station detector.
13	IFC	IF counting output terminal.
14	ΔF	ΔF detector output smoothing terminal.
15	SM	Soft-mute characteristic setting terminal.
16	Ref 1	1st nominal voltage terminal.
17	G 4	Sub-straight ground terminal.
18	IF out	IF limiter amp. output terminal.
19	Det 1	Input terminal of differential peak detection.
20	Det 2	
21	B 1	Power terminals of IF and NC units.
22	AF out	Audio signal output terminal.
23	G 2	Ground terminal.
24	NC in	Input terminal of noise canceler unit.
25	Ref 2	2nd nominal voltage terminal.
26	By 2	AGC amp. bypass terminal of noise canceler unit.
27	By 3	Noise amp. bypass terminal of noise canceler unit.
28	AGC	Noise AGC time-constant setting terminal of noise canceler unit.
29	PW	Trigger-pulse range setting terminal of noise canceler unit.
30	G 3	Ground terminal of MPX unit.

Pin No.	Symbol	Function
31	Hold	Composite signal holding terminal of noise canceler unit.
32	B 2	Power terminal of MPX unit.
33	P	Cancelling signal output terminal for pilot cancellation.
34	PiD	Output terminal of pilot detection circuit.
35	Mode	Mode output terminal of stereo/mono selection.
36	PhD1	Output terminal of phase detection circuit.
37	PhD2	
38	VCO	VCO circuit oscillation terminal.
39	NC out	Noise canceler output terminal.
40	MPX in	MPX input terminal.
41	LC	Cut-off frequency setting terminal.
42	HC	
43	TC	Tone-control (low-cut, high-cut) control terminal.
44	BC	Blender control terminal.

■μPD75328GC-167-3B9 051-1380-10 Slave Micro Computer

Outward Form



Outline

- (1) The IC, as slave microcomputer, is to have function for data communication via serial bus interface with master microcomputer.
- (2) RDS decoder IC and synchronizing/correcting IC are controlled to input RDS data.

Terminal Connection

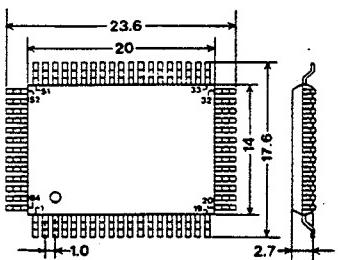
Pin No.	Terminal Name	I/O	Function
1~28		O	Unused (OPEN).
29	DK IND	I	ARI DK IND detection port. Active : LOW
30	SK IND	I	ARI SK IND detection port. Active : LOW
31	RDS IND	I	RDS IND detection port. Active : LOW
32	M6/M5	I	Detection port of M6/M5 selection. High=M6, Low=M5
33	GND	I	
34	R/CD	O	RADIO/CD audio changeover port. High=RADIO, Low=CD Auto Changer
35	REMOTE	O	REMOTE Output port. Active : LOW
36	MUTE	O	MUTE Output port. Active : LOW
37	SRQ	O	Service Request Output port. Active : LOW
38	ACC DET	I	Detection port of ACC power ON/OFF (POWER DCP) master microcomputer controls ACC-CONT. High=ACC-ON, Low=ACC-OFF Active : High
39	SCK	O	Serial bus line SCK port.
40	SO	O	Serial bus line SO port.
41	SI	I	Serial bus line SI port.

Pin No.	Terminal Name	I/O	Function												
42	RDS CLK	I	RDS CLOCK input port. RDS data is input from LC7070.												
43		I	GND												
44	PLL DO IN	I	PLL data input.												
46	RDS DATA	I	RDS DATA input port. RDS data is input from LC7070.												
47	RDS START	I	RDS DATA START bit input port. RDS data is input from LC7070.												
48	RDS ERROR	I	ERROR LOW : Incorrectable error occurred. HI : No error occurred or corrected.												
49	RDS CORR	I	CORRECTION <table border="1"><tr><th></th><th>CORR</th><th>ERROR</th></tr><tr><td>No error</td><td>H</td><td>H</td></tr><tr><td>Corrected</td><td>L</td><td>H</td></tr><tr><td>Incorrectable</td><td>L</td><td>L</td></tr></table>		CORR	ERROR	No error	H	H	Corrected	L	H	Incorrectable	L	L
	CORR	ERROR													
No error	H	H													
Corrected	L	H													
Incorrectable	L	L													
50		O	Unused (OPEN).												
51	PLL CLK	O	PLL clock output.												
52	PLL DI OUT	O	PLL data output.												
53	PLL CE	O	PLL chip enable port. Active : High												
54	LPF change-over	O	Low-pass filter changeover port.												
55	ST ON/OFF	O	Stereo/mono changeover port. Active : High												
56	ANT DUMP	O	Hi : Antenna sensitivity decreased. Active : High												
57	AV _{REF} OUT	O	A/D nominal voltage output.												
58	FM S-METER	I	FM s-meter input. (Analog input)												
59		I													
60		I													
61		I													
62		I													
63		I	GND.												
64	A/D GND	I	A/D converter GND.												
65	A/D REF	I	Input of A/D converter nominal voltage.												
66	V _{DD}		Supply voltage of 5V.												
67	XT1	I	GND.												
68	XT2	-	Unused (OPEN).												
69	V _{PP}		Connect to V _{DD} .												
70	X1														
71	X2		System clock.												
72	RESET	I	RESET input. Active : Low												
73	RDS RESET	O	Function to reset LC7070. Active : Low												
74	IF REQ	O	IF REQUEST output port. Active : High												
75	IF MUTE	O	IF MUTE output. Active : High												
76	DX/LO	O	DX/LO changeover output port. Low : DX, High : Local												
77		I	GND.												
78	FM SD	I	FM SD input port. Active : High												
79	CW IN	I	CW (Carrier Wave) detection input port. Active : Low												
80	ST IN	I	ST detection input port. Active : Low												

■μPD75116GF-763-3BE 051-1455-00 Master Micro Computer

Note: With the aid of the diode switch (initializing diode matrix), this microcomputer is available for SF-X mechanism (full logic mechanism) and RM-4 (mechanical mechanism). Some functions of each terminal and key may be classified by setting the diode switch.

I. Outward Form



II. Outline

- (1) The IC, as master microcomputer, is to have function for data communication via serial bus interface with slave microcomputer, SF-X mechanism microcomputer, CD auto-changer.
- (2) LCD driver is controlled by serial data.
- (3) Tuner unit is compatible with RDS.
- (4) DCP (Detachable Control Panel).
- (5) Dual illumination.
- (6) Direct changeover for TAPE/RADIO/CD auto-changer.

III. Terminal Connection

Pin No.	Terminal Name	I/O	Function
63	KO3		
64	KO2		
1	KO1		
2	KO0		
3	KO7	O	Key scan signal output.
4	KO6		
5	KO5		
6	KO4		
7	<u>RESET</u>	I	RESET signal input. Usually, High
8	X2		
9	X1		System clock.
10	CATS-LED		CATS-LED output.
11	CH1-LED		CH1-LED output.
12	CH2-LED		CH2-LED output.
13	CH3-LED		CH3-LED output.
14	CH4-LED		CH4-LED output.
15	CH5-LED		CH5-LED output.
16	CH6-LED		CH6-LED output.
17	WILLMI		DUAL-ILLUMI output.
19	D-SET		
20	D-RESET	O	Flip-flop control output for serial interface (C-BUS).
21	DK-OUT	O	Output of LOW signal with VOL increasing, when interrupted with traffic information and emergency broadcasting.
22	LOUD-OUT		
	REMOTE	O	LOUDNESS ON/OFF signal output. LOUDNESS ON : High
23	MTL-OUT	O	(1) SF-X mechanism Unused (OPEN) (2) RM-4 mechanism METAL ON/OFF signal output. METAL ON : High
24	CD-STOP	O	CD STOP signal output. CD STOP : High
25	REM-1	O	AMP. power supply ON/OFF control signal output. AMP. ON : High
26	Vss	I	GND.
27	PS/AS	I	PS/AS detect signal input. Active : High In TUNER ON, the preset scanning operation is started when the key is released within 2 sec, while the auto store operation is started when the key is held down over 2 sec.
28	GND	I	
29	EJECT	I	(1) SF-X mechanism EJECT key detect signal input. Detection is made at High. (2) RM-4 mechanism Unused (OPEN).

Pin No.	Terminal Name	I/O	Function												
30	BACK UP	I	Input terminal to detect +B (battery) power off: Low when +B is off.												
31	GND	I													
32	LCD-BUSY	I	LCD-BUSY input. Active : Low												
33	GND	I													
34	GND	I													
35	GND	I													
37	LCD-RESET	O	LCD-RESET output. Active : Low												
38	ACC-CONT REM-2	O	ACC control signal output for slave microcomputer. ACC ON : High, ACC OFF : Low												
39	APC-ON /OFF	O	(1) SF-X mechanism Unused (OPEN). (2) RM-4 mechanism APC ON/OFF signal output. APC ON : High												
40	BEEP	O	Sensor tone signal output. (4kHz)												
41	SI	I	Serial bus line data input.												
42	SO	O	Serial bus line data output.												
43	SCK	O	Serial bus line clock output.												
44	ACC IN	I	ACC power ON/OFF detect input. ACC power ON : High ACC power OFF : Low												
45	<u>SRQ</u>	I	Serial bus line SRQ (Service Request) input. Request queuing occurred at "Low" position. Normally "High" position.												
46	PACK IN	I	(1) SF-X mechanism Unused (GND). (2) RM-4 mechanism Cassette PACK IN/OUT signal input. PACK IN : Low, PACK OUT : High												
47	FWD/REV	I	(1) SF-X mechanism Unused (GND). (2) RM-4 mechanism Tape running direction detect signal input. FWD : High, REV : Low												
48	<u>CD-REMOTE</u>	I	CD PLAY detect signal input. CD PLAY : Low, CD STOP or CD OFF : High												
49	DOLBY-ON	O	(1) When DOLBY C is set to ON by the diode switch.												
50	DOLBY-BC		<table border="1"> <tr> <td>Pin 49</td> <td>Pin 50</td> <td>DOLBY</td> </tr> <tr> <td>H</td> <td>H</td> <td>DOLBY C</td> </tr> <tr> <td>H</td> <td>L</td> <td>DOLBY B</td> </tr> <tr> <td>L</td> <td>L</td> <td>OFF</td> </tr> </table>	Pin 49	Pin 50	DOLBY	H	H	DOLBY C	H	L	DOLBY B	L	L	OFF
Pin 49	Pin 50	DOLBY													
H	H	DOLBY C													
H	L	DOLBY B													
L	L	OFF													
			(2) When DOLBY C is set to OFF by the diode switch.												
			<table border="1"> <tr> <td>Pin 49</td> <td>Pin 50</td> <td>DOLBY</td> </tr> <tr> <td>L</td> <td>H</td> <td>DOLBY B</td> </tr> <tr> <td>H</td> <td>L</td> <td>OFF</td> </tr> </table>	Pin 49	Pin 50	DOLBY	L	H	DOLBY B	H	L	OFF			
Pin 49	Pin 50	DOLBY													
L	H	DOLBY B													
H	L	OFF													
51	R/T	O	(1) SF-X mechanism Unused (OPEN). (2) RM-4 mechanism RADIO/TAPE selector. TAPE : High, RADIO : Low												
52	<u>MUTE</u>	O	System MUTE signal output. MUTE ON : Low, MUTE OFF : High												
53	KEYIN3	I													
54	KEYIN2														
55	KEYIN1														
56	KEYINO														
57	Vpp		Connect to V _{pp} .												
58	V _{pp}		Supply voltage of 5V.												
59	LCD C/D	O	LCD-COMMAND/DATA output. COMMAND : High, DATA : Low												
60	LCD-CS	O	LCD-CHIP SELECT output. Active : Low												
61	LCD-DATA	O	LCD-DATA output.												
62	LCD-SCK	O	LCD-SCK output.												

IV. Key Matrix

§ 1. Key Matrix Table

IN	OUT	KOUT0 (pin2)	KOUT1 (pin1)	KOUT2 (pin64)	KOUT3 (pin63)	KOUT4 (pin6)	KOUT5 (pin5)	KOUT6 (pin4)	KOUT7 (pin3)
KEYIN0 (pin56)		M1	M2	M3	RDS	TP		DOLBC	
KEYIN1 (pin55)		M4	M5	M6	CD	TUNER	DOM/EXP	M5/M6	
KEYIN2 (pin54)		UP	DOWN	T-MODE	PSAS	STMONO	LOUD	MINIJA	
KEYIN3 (pin53)		BAND/PRO	TAPE	LOUD2		ILLUMI		SFX	

[] Momentary SW [] Diode SW

Note: This microcomputer set is not always equipped with all of these keys.

§ 2. Diode Switch (Initializing Diode Matrix)

* The following table shows that the diode is SHORT in case of "1" and OPEN in case of "0".

Switch Name	Function
DOLBC	Set DOLBY B-C or DOLBY B. 0: DOLBY B 1: DOLBY B-C
SFX	Set RM-4 or SF-X mechanism. 0: RM-4 mechanism 1: SF-X mechanism
MINIJA (Use only for RM-4 mechanism)	Set CD deck or portable CD player. 0: Portable CD player 1: CD deck
DOM/EXP.	Set TP key function. 0: Only TP ON/OFF key 1: When key is released within 2 sec: TP ON/OFF When key is held down over 2 sec: VOL. adjust
M5/M6	Set M1~M6 keys function. 0: M1/REP, M2/SCAN, M3/DOL, M4/BLS(APC), M5/ RDM(MTL) 1: M1, M2/REP, M3/SCAN, M4/DOL, M5/BLS(APC), M6/RDM(MTL) () ... RM-4 mechanism

§ 3. Momentary Switch

Switch Name	Function
TUNER	TUNER ON key.
BAND PRO	<ul style="list-style-type: none"> ○ BAND selector key when TUNER ON. <li style="text-align: center;">FM1 → FM2 → AM(MW/LW) ○ The function changes with the mechanism when TAPE ON. (1) SF-X mechanism Program change or PLAY key. (2) RM-4 mechanism Key is invalid. ○ DISC UP key when CD ON.
TAPE	TAPE ON key.
PS/AS	In TUNER ON, the preset scanning operation is started when the key is released within 2 sec, while the auto store operation is started when the key is held down over 2 sec.
LOUD LOUD2	LOUDNESS ON/OFF key.
CD	CD auto changer ON key.
T-MODE	In TUNER ON, the UP and DOWN key operation is selected when the key is released within 2 sec., while the DX/LO operation is selected when the key is held down over 2 sec.
UP DOWN	<ul style="list-style-type: none"> The function changes with each operation of TUNER, CD, and TAPE keys. ○ When TUNER ON MANU ON: Manual UP/DOWN MANU OFF: Seek UP/DOWN ○ When CD ON When the key is pressed over 1 sec: FF/FB start When the key is pressed within 1 sec: Track UP/DOWN ○ When TAPE ON <ul style="list-style-type: none"> (1) SF-X mechanism: FF/REW start key. SCAN OFF: REW → REW APC FF → FF APC SCAN ON: REW → SCAN REW APC FF → SCAN FF APC (2) RM-4 mechanism: The key is invalid.
M1~M6	Preset channel 1~6 call and write key.
REPEAT, SCAN, DOLBY, BLS, RANDOM, (APC), (MTL)	Keys to ON/OFF each function. () ... RM-4 mechanism
STMONO	ST/MONO selector key.
ILLUMI	Illumination selector key.
RDS	<ul style="list-style-type: none"> ○ Push RDS key for less than 2 seconds to shift RDS ON/OFF. ○ Push RDS key for more than 2 seconds to shift REG ON/OFF. ○ Push M3 key following to RDS key within 2 seconds to display "PTY". ○ Push M1 key following to RDS key within 2 seconds to display presently receiving "PI" for 5 seconds.
TP	<ul style="list-style-type: none"> ○ When diode switch "DOM/EXP" is ON TP ON/OFF key. ○ When diode switch "DOM/EXP" is OFF <ul style="list-style-type: none"> (1) Push TP key for less than 2 seconds to shift TP ON/OFF. (2) Push TP key for more than 2 seconds to shift into sound volume adjusting mode.

PARTS LIST:

©Electrical section

©MAIN P.W.B

REF NO.	PART NO.	DESCRIPTION	Q'TY
D605, 609, 610	001-0330-00	DIODE 1SS119	5
611, 612	001-0294-00	DIODE 1SS133	
D105, 501, 601	001-0356-00	DIODE 1SS184	6
602, 613, 614	001-0506-00	DIODE DAN202K	
D608	001-0361-10	DIODE 1SS198	1
D101, 102	001-0367-00	DIODE 1SS226	2
D110, 111	001-0368-00	DIODE 1SV121	2
D103, 104, 505	001-0421-24	DIODE MTZ9.1	3
	001-0423-24	DIODE MA4091	
D901, 902	001-0466-00	DIODE S5688B	2
	001-0499-00	DIODE ERA15-01	
D603, 604	001-0525-00	DIODE IMN10	2
IFT102	005-1017-00	IF-TRANSFORMER	1
IFT101	005-1022-51	IF-TRANSFORMER	1
L501	009-0633-01	CHOKE	1
L104, 105	010-1892-07	COIL	2
L106	010-2174-35	COIL *820 μ H	1
L103	010-2174-36	COIL *1mH	1
L110, 111	010-2199-04	COIL *0.22 μ H	2
L101	010-2199-16	COIL *2.2 μ H	1
L102	010-2199-21	COIL *5.6 μ H	1
L190	010-2199-34	COIL	1
L112	010-2199-35	COIL *82 μ H	1
L201	010-2199-40	COIL *220 μ H	1
VR501	012-3808-07	VARIABLE-R 22k Ω	1
VR301, 401	012-4318-06	VARIABLE-R 10k Ω	2
VR201	012-4318-09	VARIABLE-R 47k Ω	1
VR100	012-4318-11	VARIABLE-R 220k Ω	1
VR103	012-43 8-13	VARIABLE-R 470k Ω	1
VR101, 102	012-4863-07	VARIABLE-R 22k Ω	2
VR105	012-4863-10	VARIABLE-R 100k Ω	1
VR104	012-4863-12	VARIABLE-R 330k Ω	1
C501, 506	042-0417-00	ELECTROLYTIC-C 10V 220 μ F	2
C609	042-0467-00	ELECTROLYTIC-C 5.5V 0.1F	1
C150	043-0229-01	CERAMIC-CHIP-C 0.068 μ F	1
C119, 139	043-0229-03	CERAMIC-CHIP-C 0.1 μ F	2
CCT601	050-0077-02	COMPONENT-CCT 10k Ω x 4	1
CCT602	050-0088-07	COMPONENT-CCT 1k Ω x 7	1
CCT901	050-0090-62	COMPONENT-CCT 10k Ω x 10	1
CCT201	050-0101-01	COMPONENT-CCT 10k Ω x 11	1
IC604	051-0142-05	IC TC4013BF	1
IC603	051-160-56	IC HD74LS07FPD	1
IC103	051-0267-05	IC TC4066BF	1
IC202, 504	051-0556-01	IC NJM2058M	2
IC503	051-0606-71	HIC	1
	051-0606-01		
IC502	051-0619-01	IC LB0354	1
IC205	051-0620-00	IC LA2000C	1
IC301, 401	051-0853-01	IC M5201FP	2
IC605	051-0869-05	IC MB3771PF	1
IC501	051-1038-01	IC CXA1102M	1
IC505	051-1111-01	IC TA8210AH	1
IC203	051-1144-10	IC LA2231M	1
IC204	051-1150-00	IC LC7070NM	1
IC902	051-1272-00	IC μ PC2410HF	1
IC101	051-1282-00	IC TA7372P	1
IC901	051-1301-21	IC μ PD75006GB-546-3B4	1
IC104	051-1323-05	IC LC7218M	1
IC102	051-1371-00	IC TA8151F	1
IC602	051-1375-05	IC BR93C46F	1
IC201	051-1380-10	IC μ PD75328GC-167-3B9	1
IC601	051-1455-00	IC μ PD75116GF-763-3BE	1
X202	060-0115-02	CERAMIC-RESONATOR	1
SUP101, 102	060-0122-10	SURGE PROTECTOR	2
X201, 601, 901	060-0130-50	CERAMIC-RESONATOR 4.19MHz	3
X203	060-0146-50	CERAMIC-RESONATOR	1
BPF201	060-0177-00	BAND-PASS-FILTER	1
BPF101	060-0235-00	BAND-PASS-FILTER	1
DC101	060-0236-00	DC-DC-CONVERTER	1
X101	060-0240-00	CERA-RESONATOR	1
X102	061-1066-00	CRYSTAL *7.2MHz	1
Q618	100-1150-00	TRANSISTOR *2SA1150	1

REF NO.	PART NO.	DESCRIPTION	Q'TY
Q103, 203, 620	100-1162-00	TRANSISTOR *2SA1162	6
622, 901, 902			
Q108, 109	100-1297-00	TRANSISTOR *2SA1297	2
Q505, 903, 905	100-1431-00	TRANSISTOR *2SA1431	3
Q110	102-1846-00	TRANSISTOR *2SC1846	1
Q105, 107, 113	102-2712-00	TRANSISTOR *2SC2712	6
616, 623, 904			
Q114, 115, 120	102-2712-51	TRANSISTOR *2SC2712GR	4
121			
Q111, 112	102-3624-00	TRANSISTOR *2SC3624	2
Q617	102-3732-00	TRANSISTOR *2SC3732	1
Q104, 501	103-1306-00	TRANSISTOR *2SD1306	2
Q508	103-1858-50	TRANSISTOR *2SD1858	1
Q106	108-0372-28	TRANSISTOR *2SK372	1
Q201, 503, 601	125-0002-03	TRANSISTOR *RN2403	3
125-0014-03		TRANSISTOR *DTA124	
Q510	125-0003-03	TRANSISTOR *RN2203	1
Q101, 102, 116	125-2004-03	TRANSISTOR *RN1403	10
202, 502, 507			
619, 621			
624			
Q604, 606, 607	125-2004-06	TRANSISTOR *RN1406	7
608, 609, 610			
906			
R154	116-1011-10	CHIP-RESISTOR 1/8W 100 Ω	1
R637	116-1541-10	CHIP-RESISTOR 1/8W 150 Ω	1
R909	116-2721-10	CHIP-RESISTOR 1/8W 2.7k Ω	1
R138, 310, 410	117-1011-10	CHIP-RESISTOR 1/10W 100 Ω	3
R131, 134, 159	117-1021-10	CHIP-RESISTOR 1/10W 1k Ω	11
512, 508, 514			
558, 624, 628			
632, 635			
R105, 115, 124	117-1031-10	CHIP-RESISTOR 1/10W 10k Ω	38
125, 130, 142			
143, 151, 187			
205, 206, 214			
215, 221, 503			
504, 507, 511			
512, 518, 520			
521, 619, 620			
623, 627, 631			
629, 634, 636			
901~905			
908, 910, 911			
R133, 152, 155	117-1041-10	CHIP-RESISTOR 1/10W 100k Ω	11
186, 203, 209			
351, 451, 502			
626, 630			
R213, 625, 639	117-1051-10	CHIP-RESISTOR 1/10W 1M Ω	4
913			
R189, 190	117-1221-10	CHIP-RESISTOR 1/10W 1.2k Ω	2
R188	117-1231-10	CHIP-RESISTOR 1/10W 12k Ω	1
R122, 158, 307	117-1521-10	CHIP-RESISTOR 1/10W 1.5k Ω	4
407			
R302, 350, 402	117-1531-10	CHIP-RESISTOR 1/10W 15k Ω	4
450			
R184	117-1541-10	CHIP-RESISTOR 1/10W 150k Ω	1
R182	117-1821-10	CHIP-RESISTOR 1/10W 1.8k Ω	1
R104, 116	117-1831-10	CHIP-RESISTOR 1/10W 18k Ω	2
R108, 114, 141	117-2221-10	CHIP-RESISTOR 1/10W 2.2k Ω	10
144, 157, 216			
304, 306, 404			
406			
R202, 308, 408	117-2231-10	CHIP-RESISTOR 1/10W 22k Ω	4
622			
R129, 137, 201	117-2241-10	CHIP-RESISTOR 1/10W 220k Ω	5
202, 207			
R110, 317, 417	117-2711-10	CHIP-RESISTOR 1/10W 270 Ω	3
R181	117-2721-10	CHIP-RESISTOR 1/10W 2.7k Ω	1
R303, 403, 501	117-2731-10	CHIP-RESISTOR 1/10W 27k Ω	3
R604, 607, 608	117-3311-10	CHIP-RESISTOR 1/10W 330 Ω	6
609, 610, 611			

| REF NO. | PART NO. | DESCRIPTION |
<th
| --- | --- | --- |

■TAPE MECHANISM ELECTRICAL SECTION

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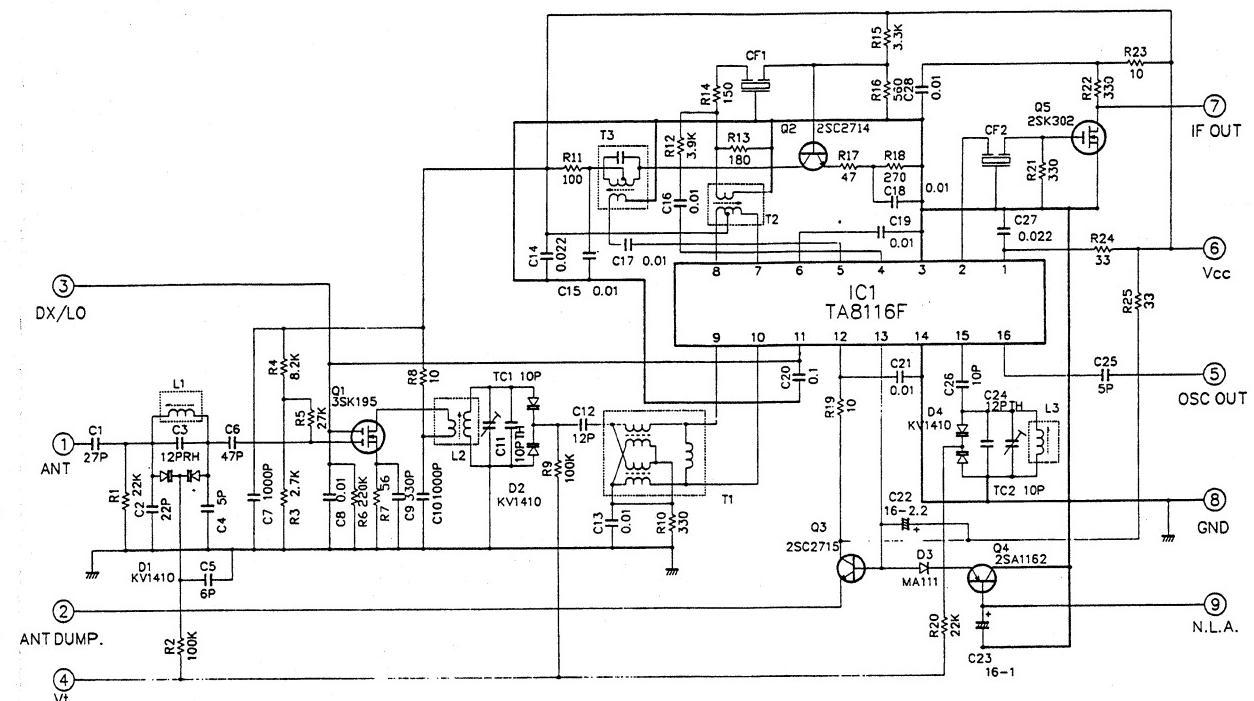
REF.NO.	PART NO.	DESCRIPTION	Q'TY
IC2	051-0620-00	IC LA2000	1
IC1	051-0714-01	IC TA7705F	1
Q1	102-3402-00	Transistor 2SC3402	1
R5,9,18	116-1011-10	Chip resistor 1/8W100Ω	3
R19	116-1541-10	Chip resistor 1/8W150kΩ	1
R14	117-1031-10	Chip resistor 1/10W10kΩ S	1
R7,11	117-1131-10	Chip resistor 1/10W11kΩ S	2
R8,10	117-1531-10	Chip resistor 1/10W15kΩ S	2
R1~4	117-3331-10	Chip resistor 1/10W33kΩ S	4
R12	117-3341-10	Chip resistor 1/10W330kΩ S	1

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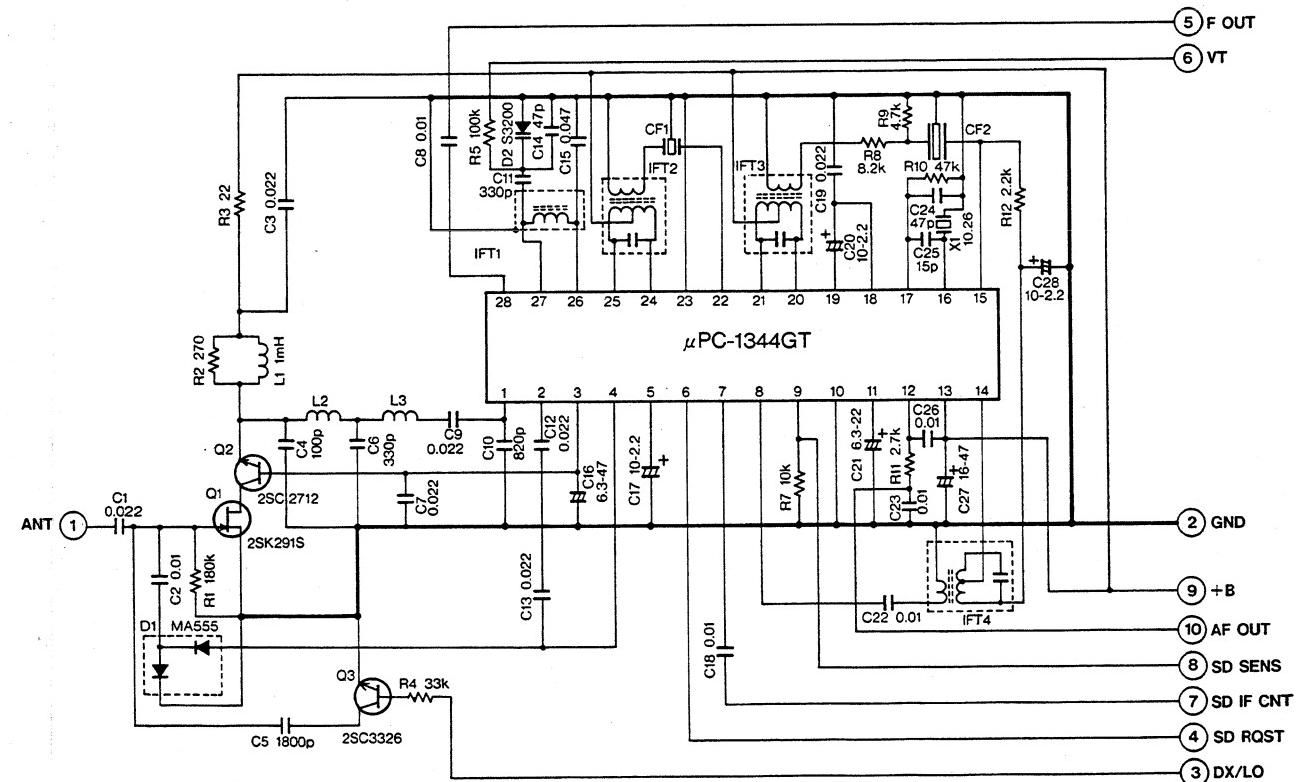
REF NO.	PART NO.	DESCRIPTION	Q'TY
SW4	013-3937-00	Switch	1
SW1,2	013-3863-00	Switch	2

NOTE : OM (Oxidized Metal) SS (Super Small)
S (Small) TC (Temperature-Compensating)
HD (Higher Dielectric) LL (Low Leak)
SC (Semi-Conductor) USS (Ultra Super Small)

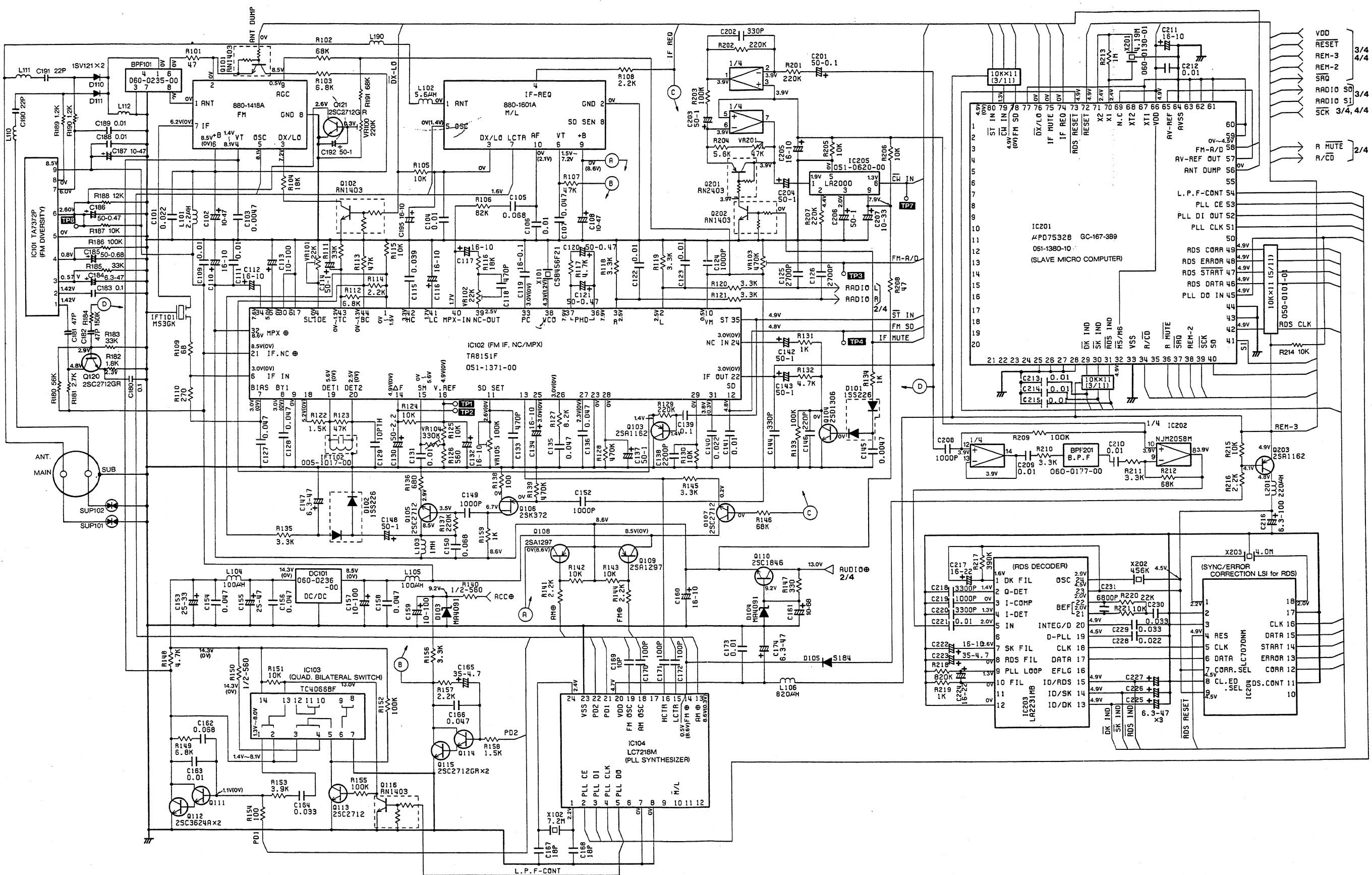
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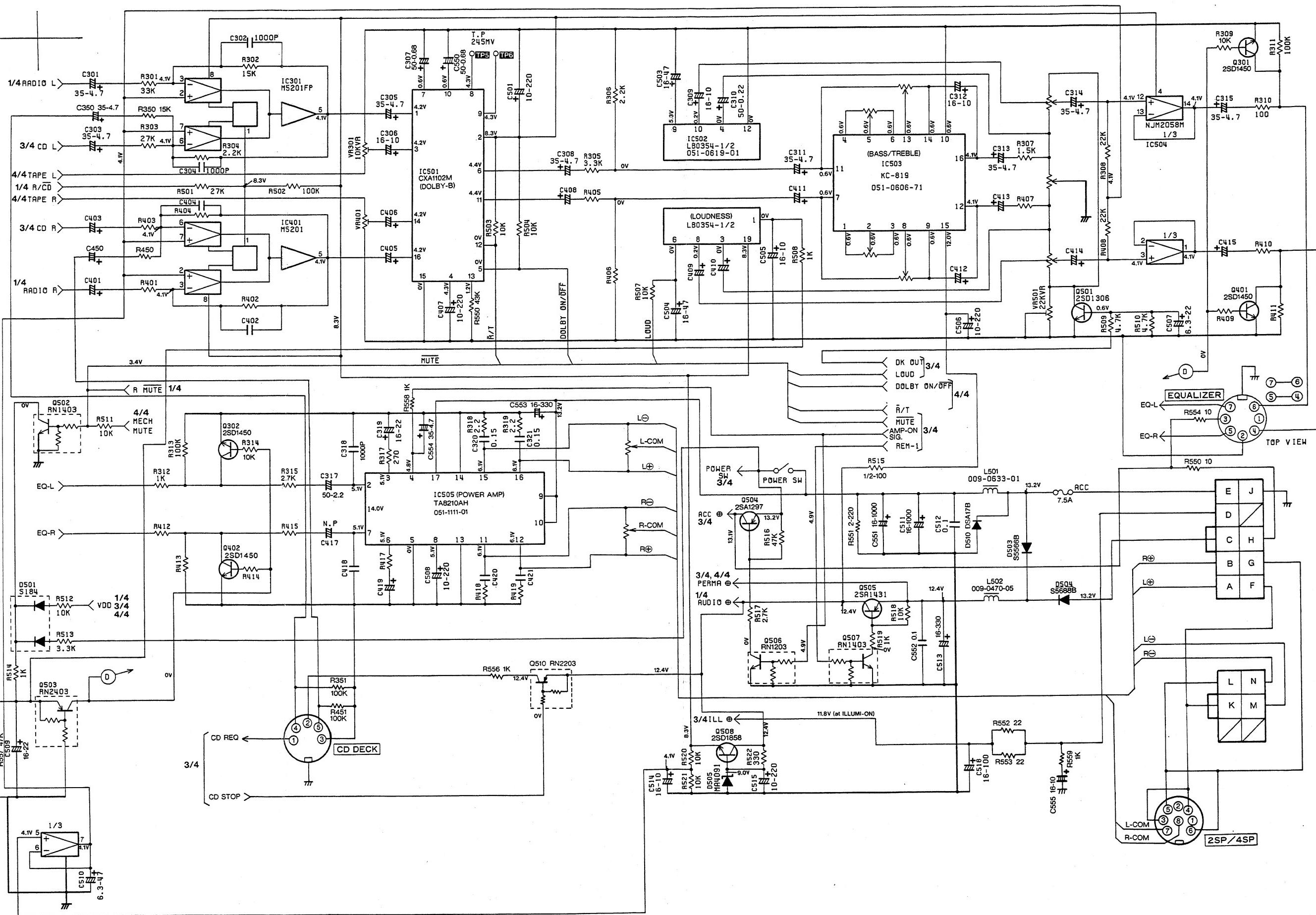
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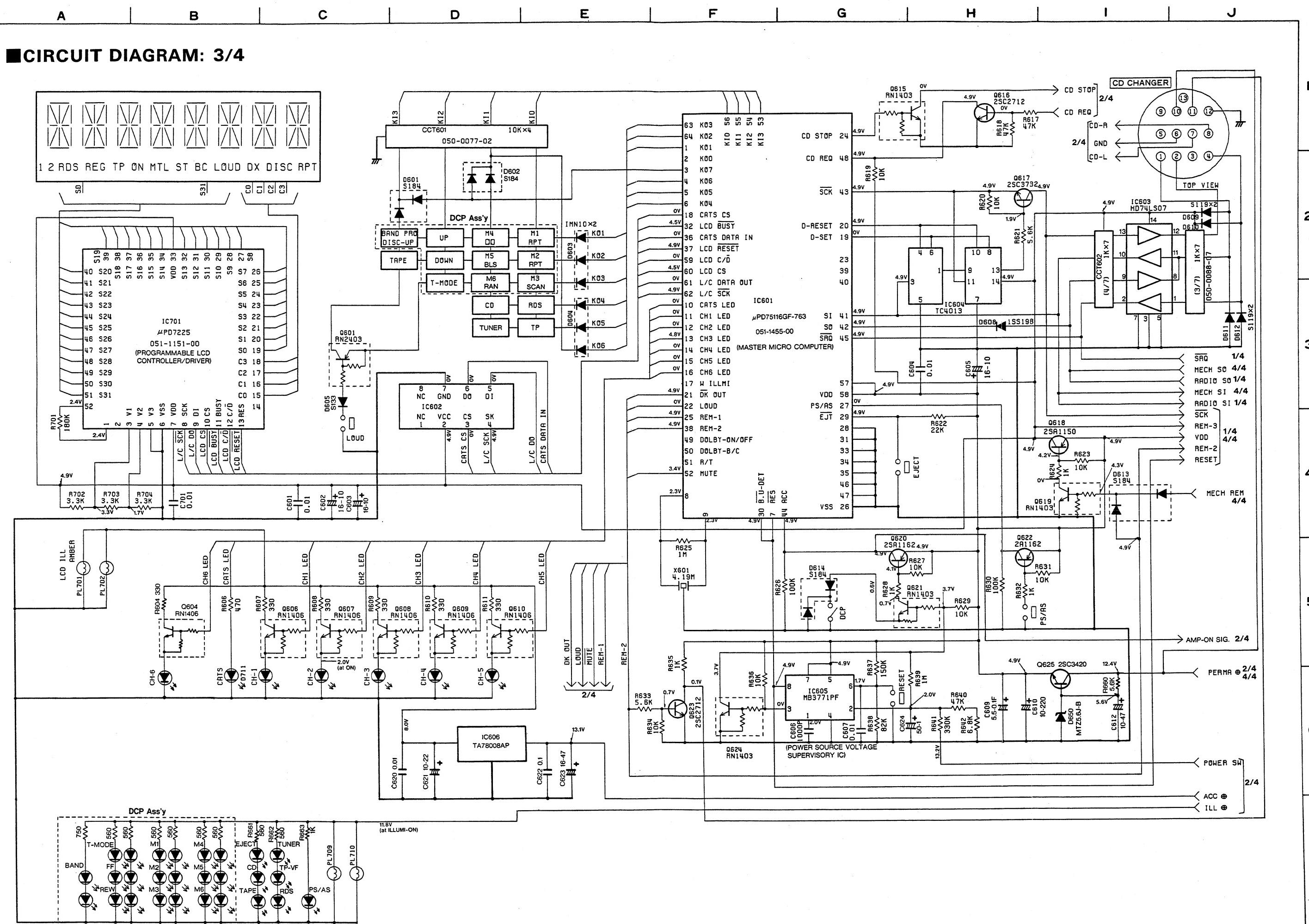


■ CIRCUIT DIAGRAM: 1/4

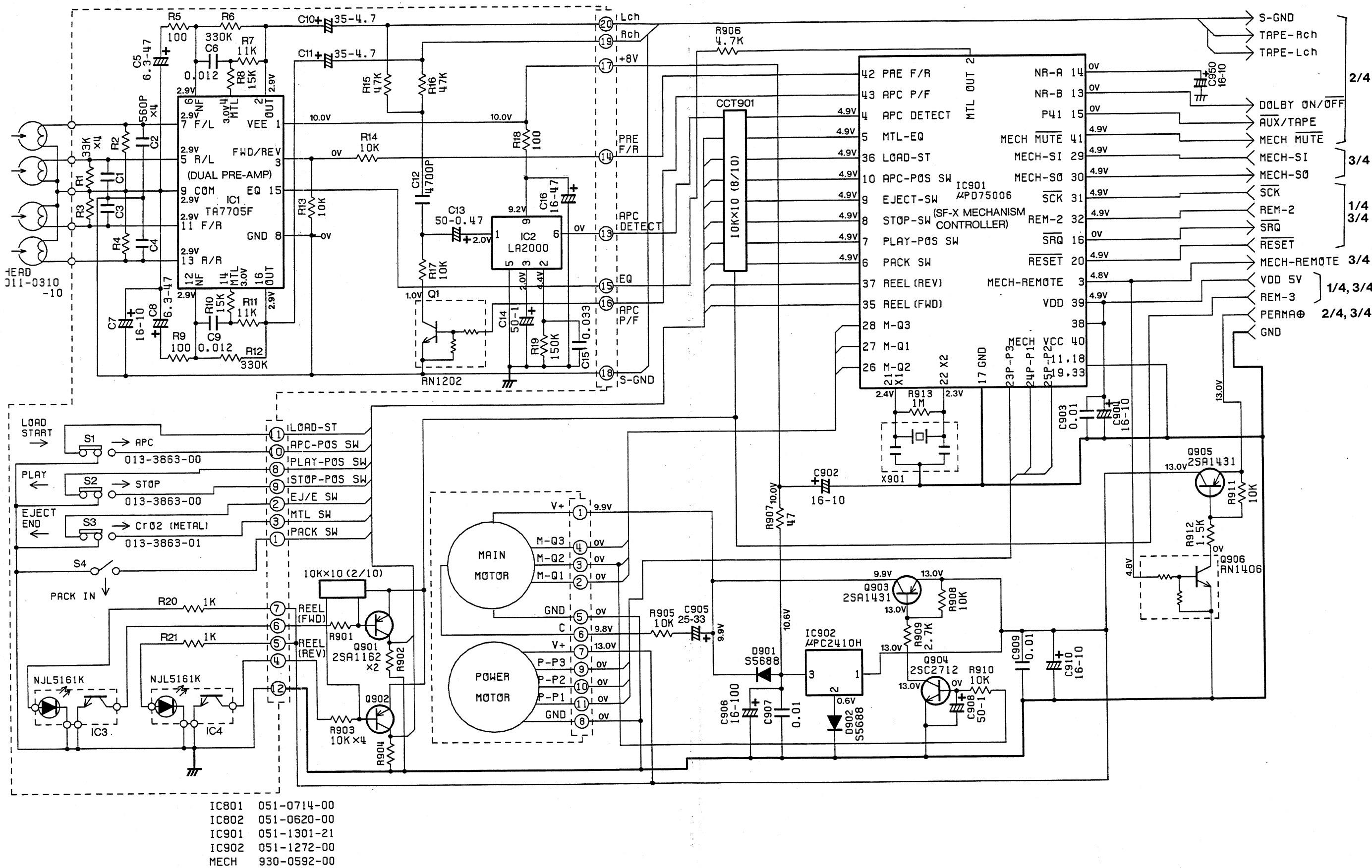


■ CIRCUIT DIAGRAM: 2/4

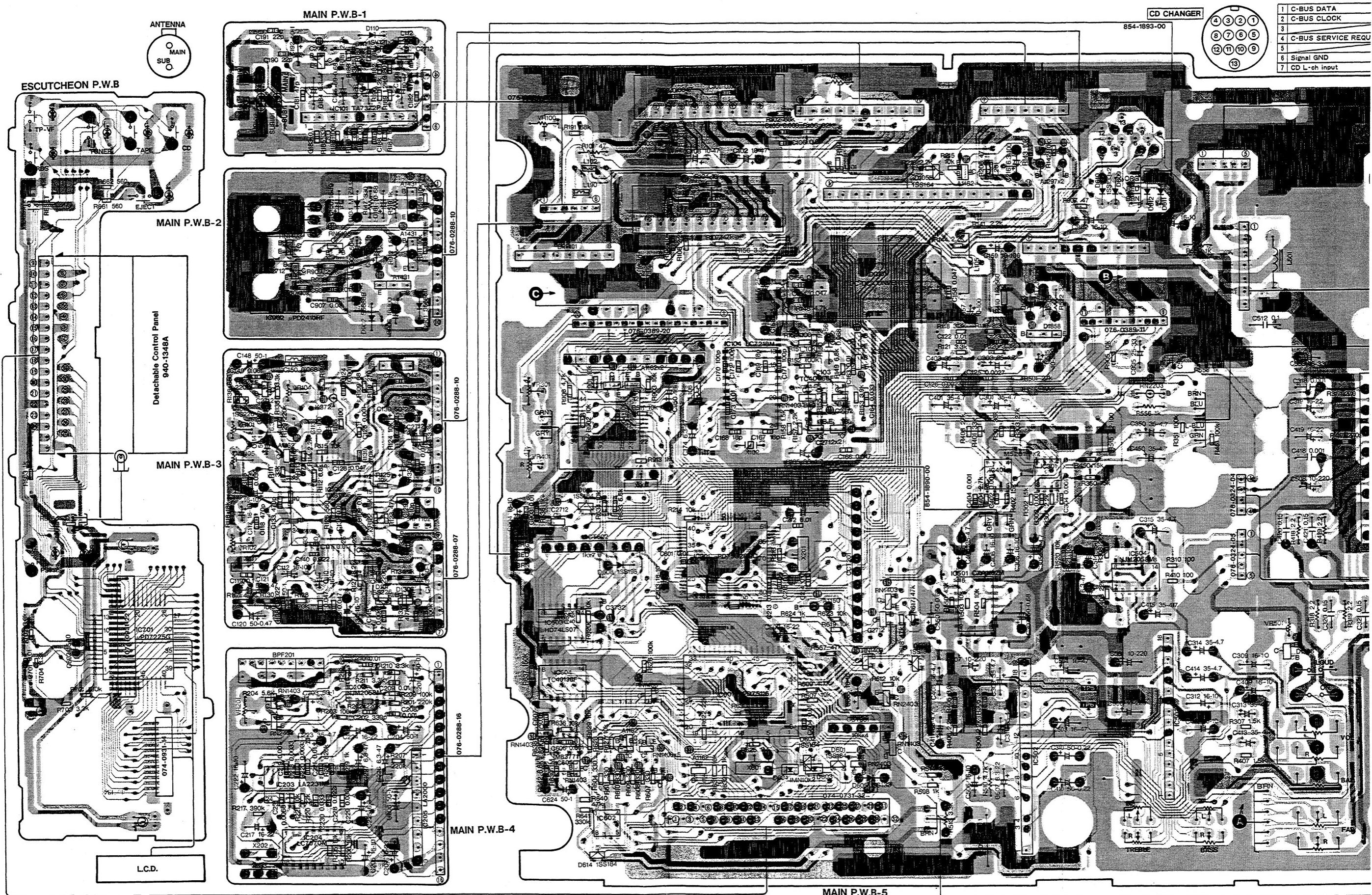


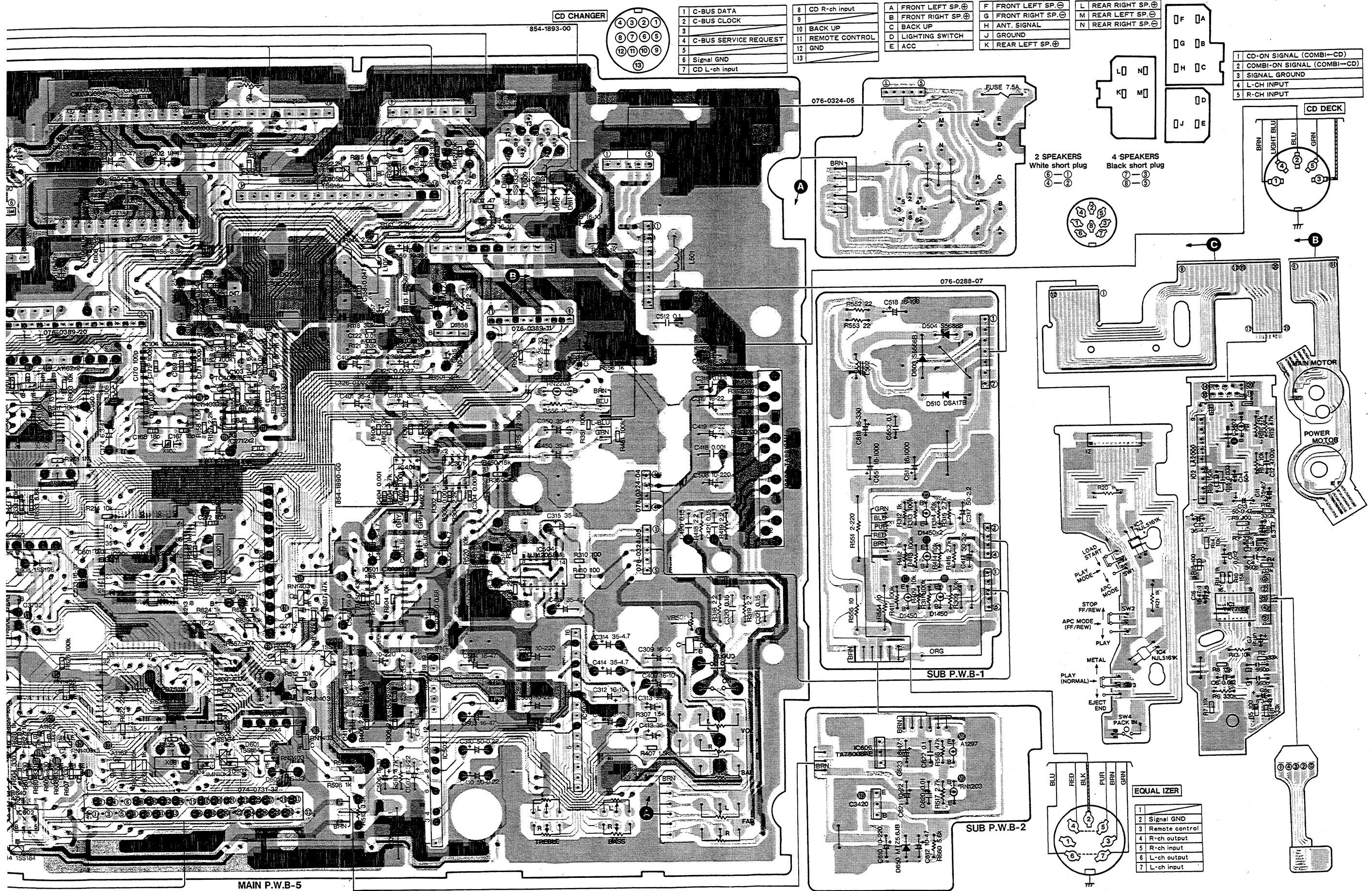


CIRCUIT DIAGRAM: 4/4



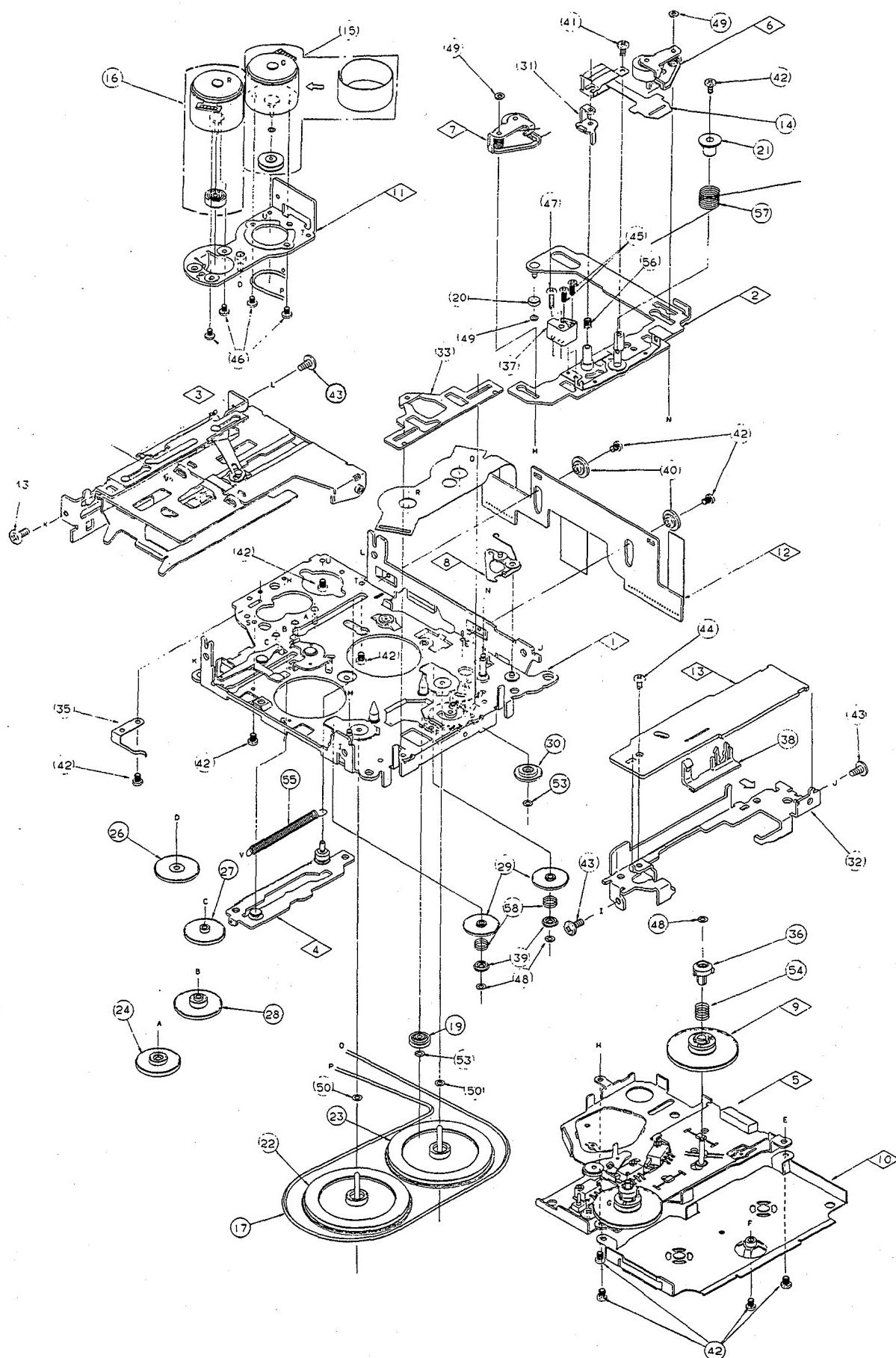
■ PRINTED WIRING BOARD:





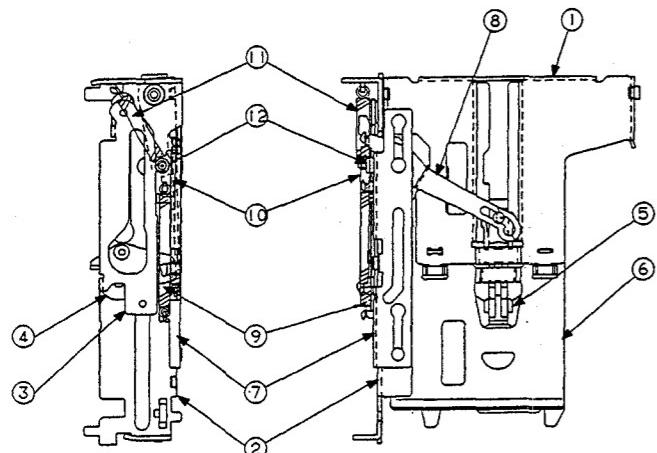
■ EXPLODED VIEW • PARTS LIST:

©Tape mechanism section (SF-X TYPE 0) 930-0592-04

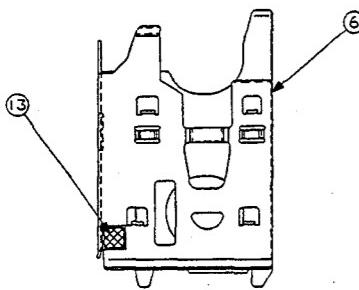


REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4102-07	Deck plate ass'y	1	30	613-0250-00	Change gear A	1
2	960-4093-05	Head plate ass'y	1	31	630-2342-04	Adjust link	1
3	960-4107-06	Eject sub ass'y	1	32	630-2388-03	P.W.B frame TZ	1
4	960-4011-05	Mode plate ass'y	1	33	630-2343-04	Change plate	1
5	960-4106-04	Bottom sub ass'y	1	35	630-2413-01	Motor spring	1
6	960-4050-03	Roller sub ass'y F	1	36	631-0601-01	Slide bush	1
7	960-4051-03	Roller sub ass'y R	1	37	631-0650-00	Adjust base	1
8	960-4099-04	CH-hold ass'y	1	38	631-0636-00	Guide base	1
9	960-4016-03	Reel base ass'y F	1	39	631-0637-00	Idler roller	2
10	960-4105-03	Flywheel plate sub ass'y	1	40	631-0640-00	P.W.B guide C	2
11	960-4129-02	Motor plate ass'y	1	41	714-2003-81	Machine screw (M2x3)	1
12	099-8928-00	P.W.B	1	42	714-2004-81	Machine screw (M2x4)	11
13	099-8989-01	PRE-P.W.B	1	43	714-3004-11	Machine screw (M3x4)	4
14	011-0310-20	Head	1	44	714-2604-11	Machine screw (M2.6x4)	1
15	SMA-123-100	Main motor	1	45	716-0833-02	Azimuth screw	2
16	SMA-122-101	Power motor	1	46	716-0835-00	Motor screw	4
17	602-0111-00	Belt	1	47	739-2090-17	Precision screw	1
19	604-0036-03	Tension pulley	1	48	746-0761-00	Washer	3
20	610-0316-01	Head-P-roller-M	1	49	746-0768-00	Washer	3
21	610-0322-01	CH-link sleeve	1	50	746-0624-00	Washer	2
22	611-0084-02	Flywheel R	1	53	746-0724-00	Washer	2
23	611-0085-02	Flywheel F	1	54	750-2720-00	Slide spring	1
24	613-0122-01	Shift-P-gear	1	55	750-2718-00	Mode-P-spring	1
26	613-0246-00	Gear A	1	56	750-2721-02	Azimuth spring	1
27	613-0247-00	Gear B	1	57	750-2790-01	HP-spring	1
28	613-0248-00	Gear C	1	58	750-2793-01	Idler spring	2
29	613-0249-00	Play idler gear	2				

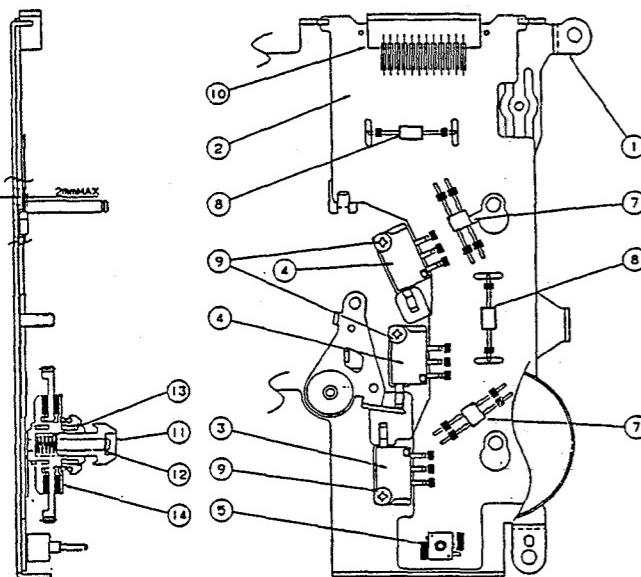
©EJECT SUB Ass'y 960-4107-06



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4007-03	Guide arm ass'y	1
2	960-4108-04	Side frame ass'y	1
3	960-4009-05	Eject-P-ass'y	1
4	960-4010-04	Eject link ass'y	1
5	631-0599-04	Pack stopper	1
6	606-0090-07	Pack guide	1
7	960-4057-04	Loading-P-ass'y	1
8	630-2340-01	Swing arm	1
9	750-2791-00	Load-P-spring	1
10	750-2716-01	Swing-A-spring	1
11	750-2719-01	Guide arm spring	1
12	610-0314-02	Guide-A-roller	1
13	746-0816-00	Pack set washer	1



©BOTTOM SUB Ass'y 960-4106-04



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-4096-03	Bottom-P-ass'y	1
2	099-9396-00	P.W.B	1
3	013-3863-01	Switch	1
4	013-3863-00	Switch	2
5	013-3937-00	Switch	1
7	051-1114-00	IC (NJL5161K-P)	2
8	111-1021-91	Film resistor (1kΩ)	2
9	716-0834-00	Screw	3
10	074-0931-12	FPC connector	1
11	631-0601-01	Slide bush	1
12	746-0761-00	Washer	1
13	750-2720-00	Slide spring	1
14	960-4015-03	Reel base ass'y	1

■ADJUSTMENT OF MECHANISM:

1. Adjustment of tape speed

Reproducing the 3kHz speed tape, adjust VR inside the motor so that the reading of frequency counter becomes within the range of 2990Hz to 3100Hz. (Refer to Fig. 1)

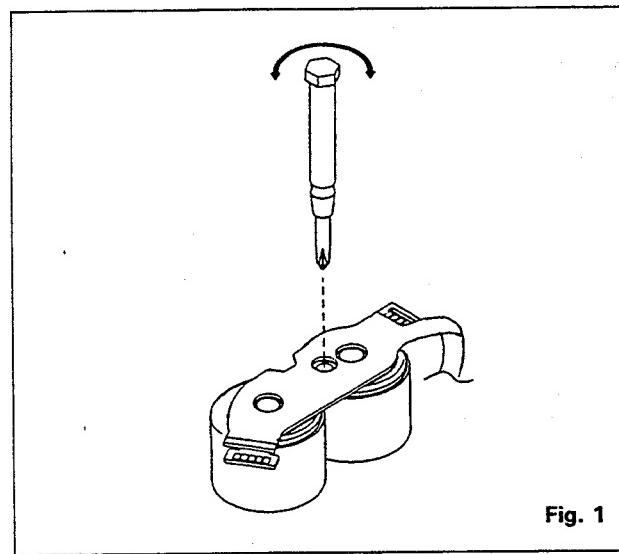


Fig. 1

2. Adjustment of head azimuth

(1) Play back azimuth tape (10kHz, -10dB) and adjust the screw so that the peak of FWD and REV will be 10kHz.
(Refer to Fig. 2)

As shown in the figure, ① turn in the direction ② tilts the head upward and a turn in the direction ③ tilts it downward.

(2) After completion of adjustment, apply LOCK-TIGHT Bond to the ④ section.
(Refer to Fig. 2)

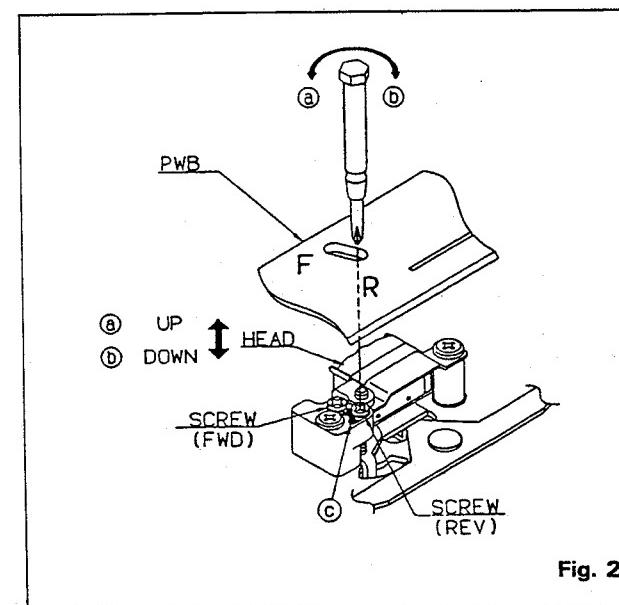


Fig. 2

■REPLACEMENT OF MECHANISM PARTS:

1. Replacement of belt, flywheel and reel base ass'y

- (1) Remove Screws Ⓐ (4 pcs.).
(Refer to Fig. 3)
- (2) Remove the flywheel-P-ass'y and then the bottom sub ass'y.

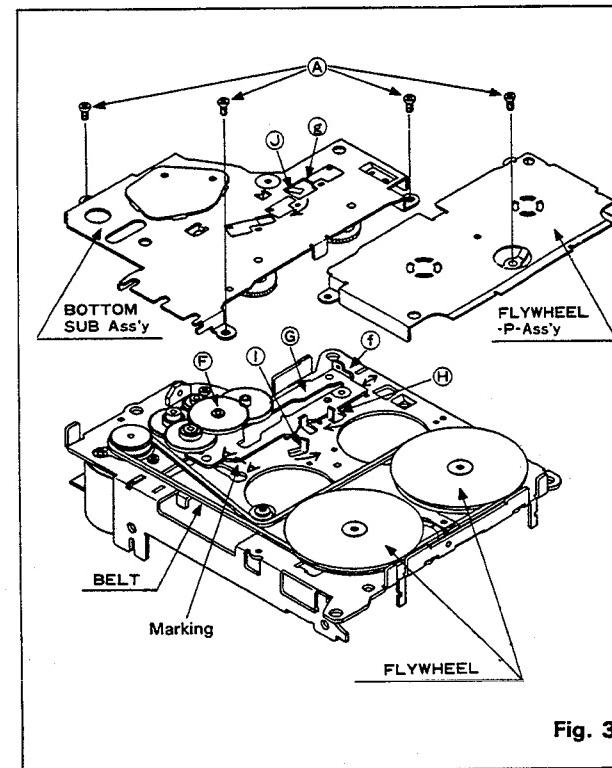


Fig. 3

- (3) Replace the belt with a new one.
※Pay attention so that oils such as MR paste do not stick to the belt.
- Replace the flywheel with a new one.
(Refer to Fig. 4).
- ※When replacing the flywheel, apply FLOIL947P to Section ④.
Note: Use specified oils.

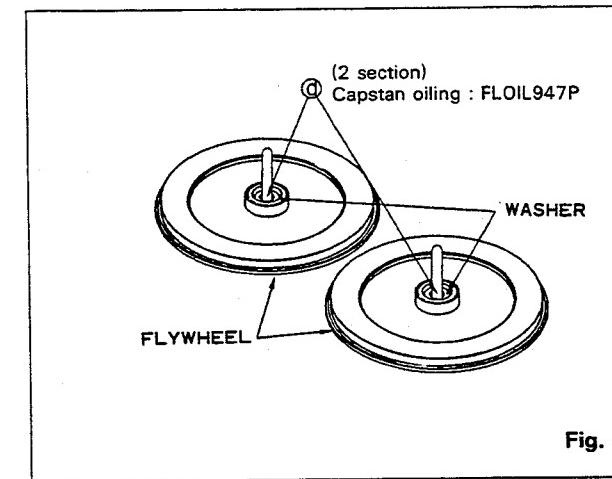


Fig. 4

4. Replacement of reel base ass'y

- (Refer to Fig. 5)
- (a) Remove the special washer ⑤ ($\phi 3.2$ split).
 - (b) Remove the slide bushing ⑥ and slide spring ⑦.
 - (c) Replace the reel base ass'y with a new one.
※When replacing the reel base ass'y, apply FLOIL G-488 to the section ⑧ of the reel shaft. Also check F and R sides of the reel base ass'y. The F side of the reel base ass'y is identified with blue, and the R side with white.
 - (d) Reassemble the reel base ass'y in the reverse order of (a) and (b).

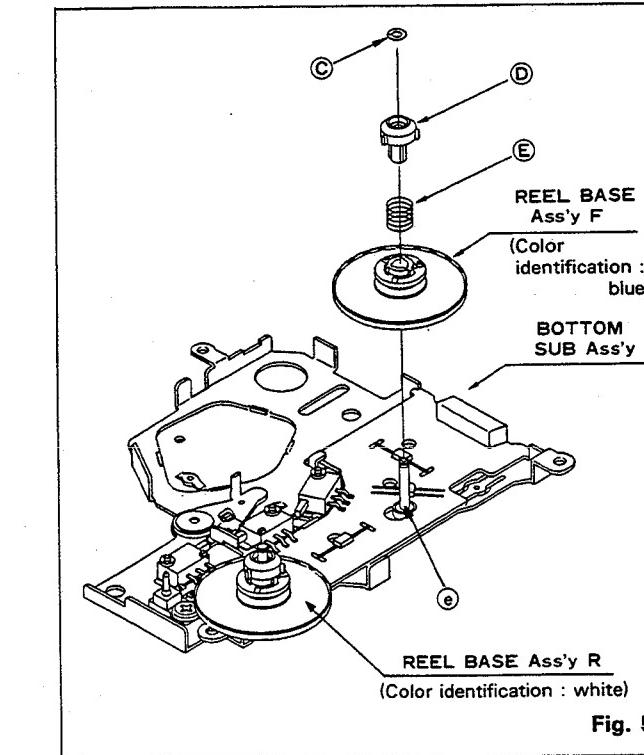


Fig. 5

- (5) Following replacement of the belt, flywheel and reel base ass'y, remove the gear C ⑩ and move Section ⑪ of the mode plate ass'y ⑫ in the arrowed direction to make marks A-A fit. (Refer to Fig. 3).

※Moving the mode plate ass'y ⑫ without removing the gear C ⑩ causes chipping of gears.

- (6) Hold ⑩ again.
- (7) Move links of ⑬ and ⑭ to the arrowed direction.
- (8) Push the link ⑮ of the bottom sub ass'y toward the arrowed direction through the hole ⑯ so that the reel base ass'y is placed below the flywheel. Holding this condition, drop the bottom sub ass'y.
- (9) Reassemble the flywheel-P-ass'y and fasten it with Screws Ⓐ (4 pcs.).

2. Replacement of head

- (1) Remove solder from 5 points at Section ⑰. (Refer to Fig. 6).
- (2) Loosen Screws ⑯ (2 pcs.) to remove the frame sub ass'y.

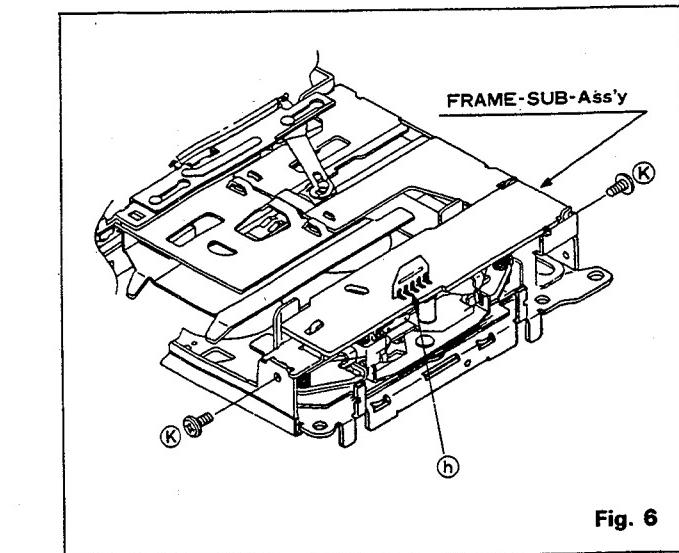


Fig. 6

- (3) Remove the screw ⑯ and then ADJUST-BASE ⑰.
- (4) Remove the screw ⑯, lift ADJUST-LINK ⑯ and replace the head. (Refer to Fig. 7)
- (5) Re-assemble FRAME-SUB-ASS'Y in the reverse procedures of 1 to 4.
- (6) Perform the azimuth adjustment of the head.

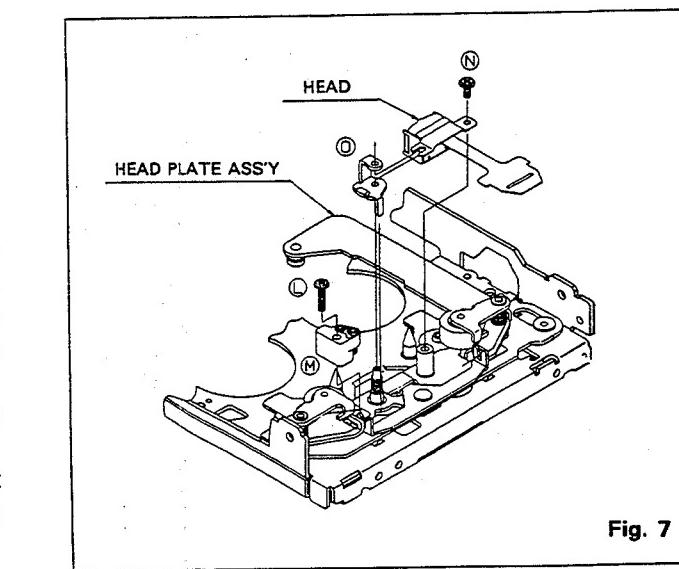
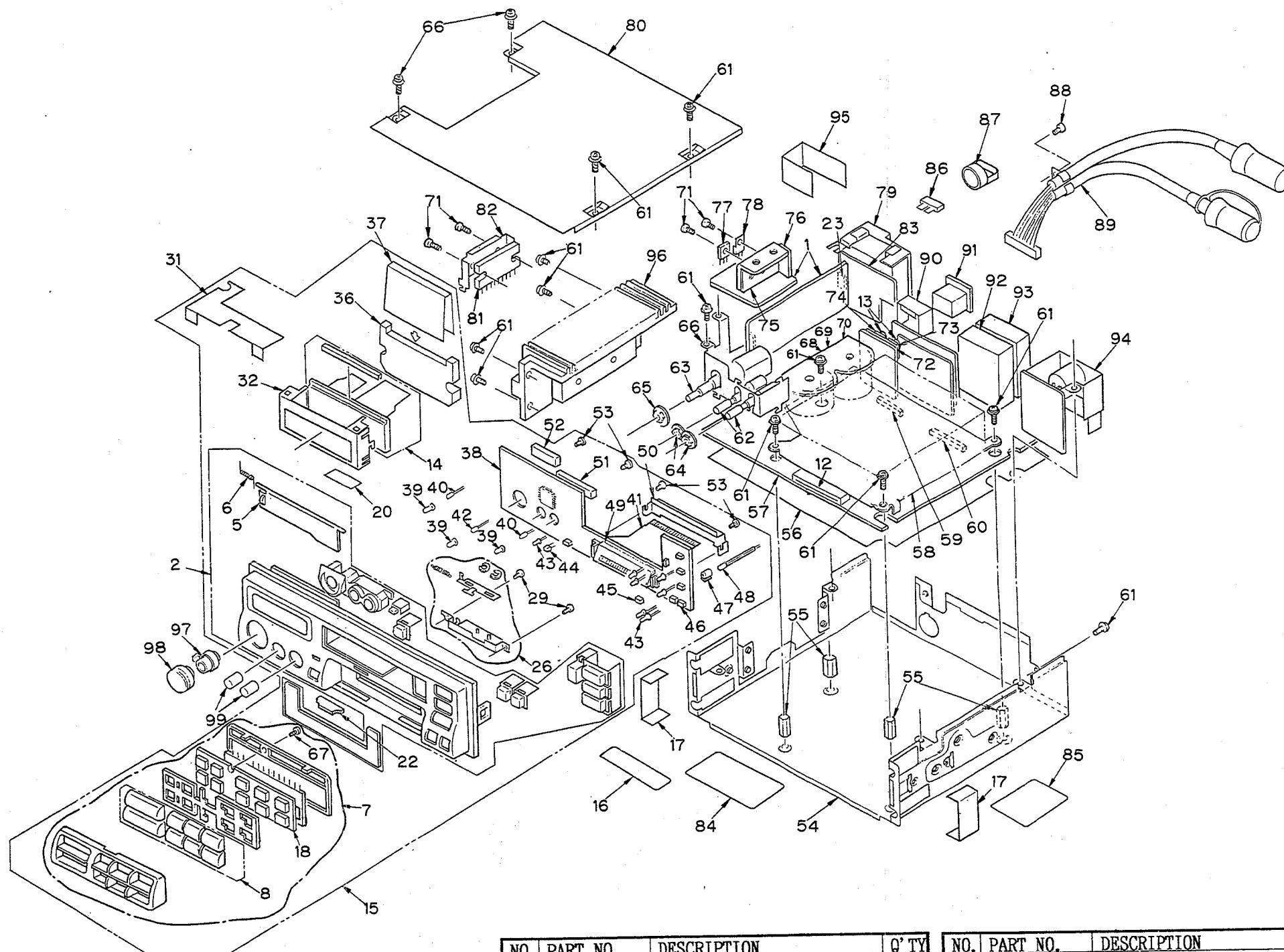


Fig. 7

■ EXPLODED VIEW • PARTS LIST:

© Main section



NO.	PART NO.	DESCRIPTION	Q' TY
1	099-9348-00	PWB	1
2	940-1347A	SUB_ESCUTCHEON-ASSY	1
5	320-0449-08	DUSTPROOF-CVR	1
6	750-2309-04	SPRING	1
7	940-1348A	DCP ASS'Y	1
8	947-0271-00	BUTTON ASSY	1
12	074-0731-32	OUTLET SOCKET	1
13	714-2608-81	MACHINE SCREW	2
14	379-0025A	LCD-ASSY	1
15	940-1346A	ESCUTCHEON ASSY	1
16	347-3315-00	SHADE	1
17	347-3458-00	SHIELD PAPER	2

NO.	PART NO.	DESCRIPTION	Q' TY
18	379-0342-00	DCP *INDICATOR	1
20	347-3182-00	SHADE	1
22	382-2426-00	BUTTON *DCP-EJECT	1
23	330-9317-00	PWB SUPPORT	2
26	330-0004A	LOCK LEVER ASSY	1
29	716-0674-00	SCREW *DCP HOOK	2
31	347-3375-00	CONDUCTOR	1
32	330-9393-00	LCD HOLDER	1
36	335-3380-00	ILLUMI PLATE	1
37	347-3240-00	REFLECTOR	1
38	099-9351-01	PWB	1
39	345-2830-79	PL CAP	3

NO.	PART NO.	DESCRIPTION	Q' TY
40	017-0373-00	PILOTLAMP	2
41	099-9350-00	FLEXIBLE PWB	1
42	017-0345-09	PILOTLAMP	1
43	001-0576-01	DIODE	7
44	001-0459-01	DIODE	1
45	013-3868-00	SWITCH *RESET	1
46	013-3741-01	SWITCH	7
47	345-3335-09	PL HOLDER	1
48	017-0345-22	PILOTLAMP	1
49	074-0913-00	OUTLET SOCKET	1
50	330-9523-00	CONNECTOR HOLDER	1
51	074-0931-22	OUTLET SOCKET	1
52	074-0931-14	OUTLET SOCKET	1
53	716-0674-00	STEEL SCREW *PWB	4
54	311-1489-01	LOWER CASE	1
55	716-1461-00	SPACER *MECH	4
56	347-3376-01	INSULATOR	1
57	099-9347-01	PWB	1
58	930-0592-04	TAPE MECHANISM	1
59	076-0389-11	PLUG *11P	1
60	076-0389-20	PLUG *20P	1
61	716-0878-00	IT-SCREW	14
62	012-5031-00	VARIABLE-R *BASS/TREB	2
63	012-5030-00	VARIABLE-R *MAIN	1
64	722-0433-00	NUT *BASS/TREB	2
65	722-0370-00	NUT *MAIN	1
66	330-9570-00	VOL-HOLDER	1
67	716-1521-00	WAVE SCREW *2X6	1
68	313-1436-00	HEAT SINK *MOTOR	1
69	347-3416-00	INSULATOR *MOTOR	1
70	347-3259-00	DOUBLE FACE *MOTOR	1
71	714-2610-81	MACHINE SCREW	4
72	313-1422-00	HEAT SINK	1
73	102-1846-00	TRANSISTOR 2SC1846	1
74	051-1272-00	IC uPC2410HF	1
75	330-9409-00	HEAT HOLDER	1
76	313-1423-00	HEAT SINK	1
77	102-3420-00	TRANSISTOR 2SC3420	1
78	051-0624-00	IC TA78008AP	1
79	074-0944-00	OUTLET SOCKET	1
80	303-0395-00	UPPER-COVER	1
81	051-1111-01	IC *TA8210AH	1
82	330-9528-00	IC HOLDER	1
83	099-9349-00	PWB	1
84	286-6936-21	SETPLATE	1
85	285-1485-01	GUIDE LABEL	1
86	060-0057-55	AUTO FUSE *7.5A	1
87	076-0397-01	PLUG *4SP-2SP	1
88	714-3005-81	MACHINE SCREW *DIN	1
89	854-2284-00	EXTENSION LEAD	1
90	330-9126-00	DIN-SOCKET	1
91	074-0818-00	OUTLET SOCKET	1
92	880-1601A	LW/MW BLOCK-ASSY	1
93	880-1418A	FM BLOCK-ASSY	1
94	330-9571-00	PWB-HOLDER *ANT	1
95	347-3415-00	INSULATOR *RDS PWB	1
96	313-1448-00	HEAT SINK	1
97	380-5191-00	KNOB *FAD	1
98	380-5190-00	KNOB *VOL	1
99	380-5192-00	KNOB *BASS/TREB	2